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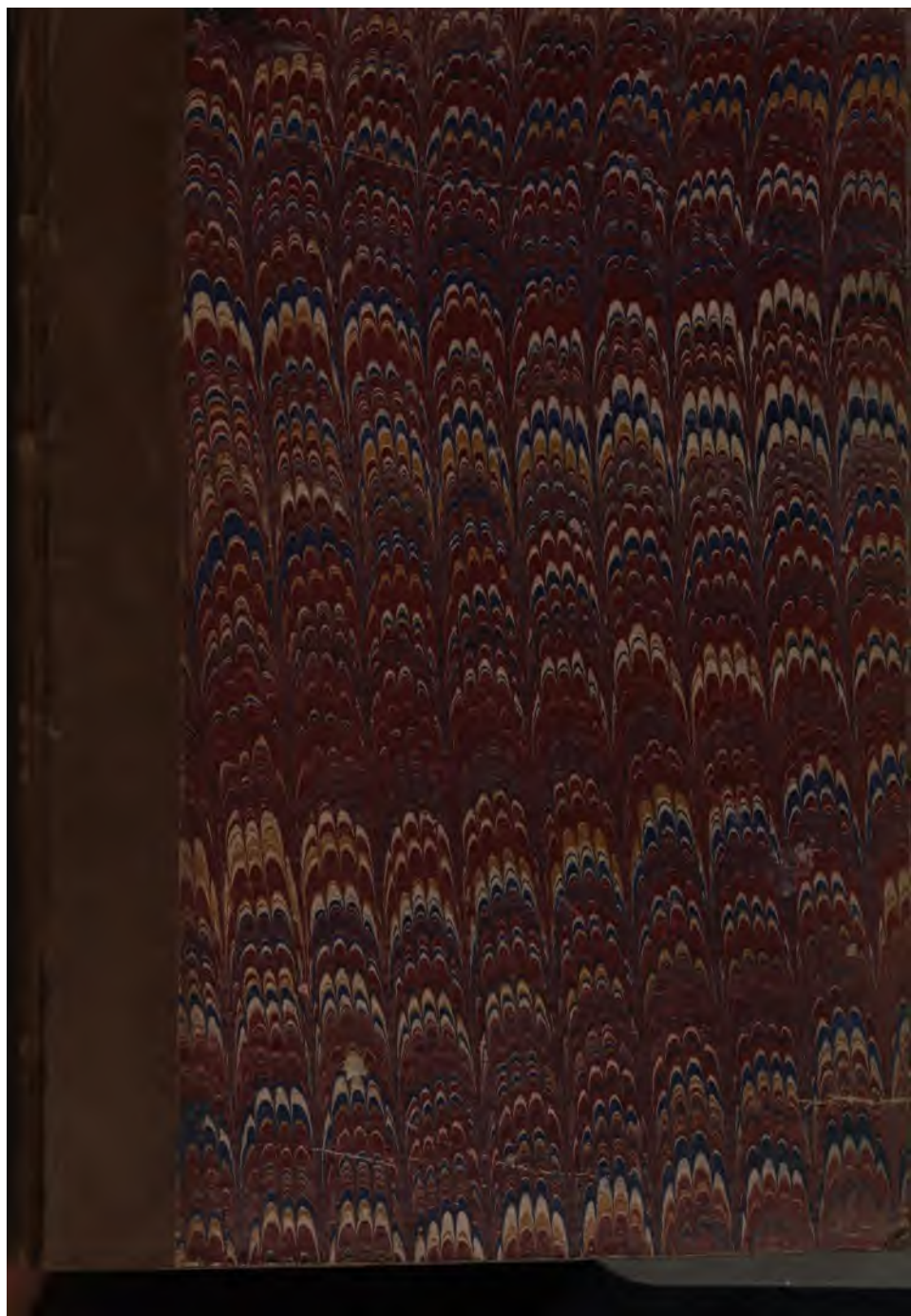
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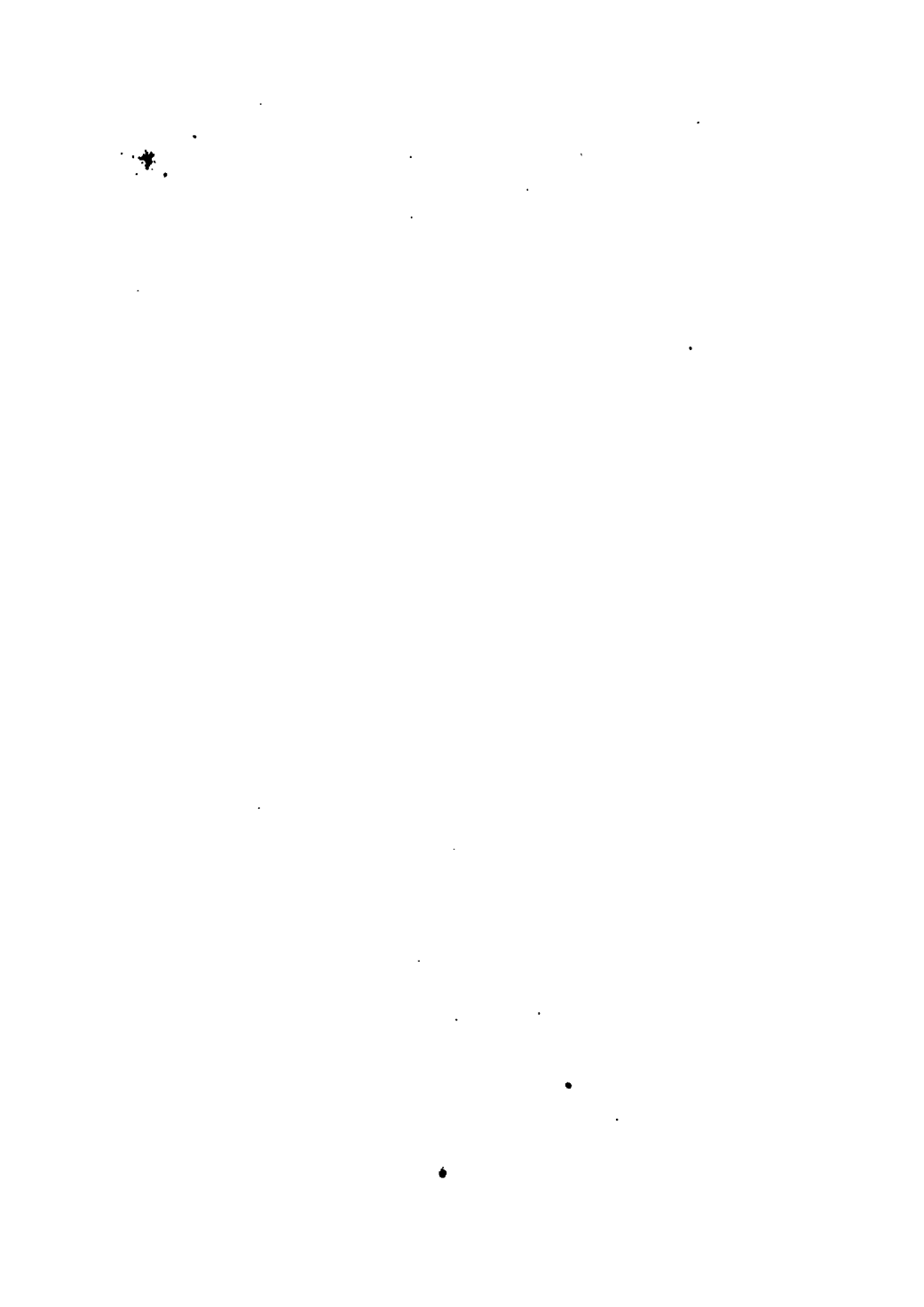
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PATENTS FOR INVENTIONS.

ABRIDGMENTS

OF

Specifications

RELATING TO

**BLEACHING, DYEING, AND PRINTING
CALICO AND OTHER FABRICS,
AND YARNS;**

INCLUDING

**THE ENGRAVING AND MANUFACTURE OF PRINTING ROLLERS,
THE PREPARATION OF DRUGS, AND OTHER PROCESSES.**

PART II.—A.D. 1858–1866.

PRINTED BY ORDER OF THE COMMISSIONERS OF PATENTS.

SECOND EDITION.



LONDON:

**PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
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1877.

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P R E F A C E.

THE Indexes to Patents are now so numerous and costly as to render their purchase inconvenient to a large number of inventors and others, to whom they have become indispensable.

To obviate this difficulty, short abstracts or abridgments of the Specifications of Patents under each head of invention have been prepared for publication separately, and so arranged as to form at once a Chronological, Alphabetical, Subject-matter, and Reference Index to the class to which they relate. As these publications do not supersede the necessity for consulting the Specifications, the prices at which the printed copies of the latter are sold have been added.

The number of Specifications from the earliest period to the end of the year 1866 amounts to 59,222. A large proportion of the Specifications enrolled under the old law, previous to 1852, embrace several distinct inventions, and many of those filed under the new law of 1852 indicate various applications of the single invention to which the Patent is limited. Considering therefore the large number of inventions and applications of inventions to be separately dealt with, it cannot be doubted that several properly belonging to the group which forms the subject of this volume have been overlooked. In the progress of the whole work such omissions will from time to time become apparent, and be supplied in future editions.

This volume is a continuation of the Abridgments of Specifications relating to Bleaching, Dyeing, and Printing Calico and other Fabrics, and Yarns, Part I., and brings the Abridgments to the end of the year 1866. It is intended to continue them to the end of the year 1876 as soon as the Abridgments of all the Specifications from the earliest period to the end of 1866 have appeared in a classified form. Until that takes place, the inventor can continue his examination of the

Specifications relating to the subject of his search by the aid of the Subject-matter Index for each year.

THIS series of abridgments, besides embracing inventions relating to the subjects enumerated in the title page, includes the making of such substitutes for soap (washing or cleansing powders) as possess some affinity to bleaching powders and liquors, though soap itself is excluded. The manufacture and application of special "drugs" (dyes, mordants, &c.) are included, with the exception of the manufacture of such generally used chemicals as are comprehended within the series devoted to "Acids, Alkalies, Oxides, and Salts." Compounded preparations of chemicals for dyeing or bleaching purposes, which would not occur in the last-named volume of abridgments, are included. Paints, pigments, varnishes, and inks are excluded, with the exception of matters specially intended for printing calico and other fabrics and yarns.

The bleaching, dyeing, and printing referred to in the title of the present series are entirely restricted to the treatment of textile fabrics and yarns. Printing on paper or other non-woven fabrics (as for instance, on certain descriptions of floor-cloth) are excluded, as also is printing on the prepared face of American cloth, oil cloth, or any similar fabric with a woven body or backing: likewise inventions for printing with other material than moist or liquid matter (such as inks, thick or thin paints, mordants, &c.), are excluded, as, for example, most inventions relating to printing with flock, foil, and metallic or other powder, which mainly refer to the ornamentation of paper-hangings and other fabrics not treated of in this work. The classes of inventions mentioned in this paragraph as excluded will be found in the series relating respectively to "Artificial Leather, Floorcloth," &c.; "Books, Portfolios, Card Cases, &c."; "Skins, Hides, and Leather"; and "Cutting, Folding, and Ornamenting Paper," &c.

Inventions relating to bleaching and the similar treatment of unmanufactured fibrous materials, omitted from the present volume, will be found in the series respectively devoted to "Spinning" and "Manufacture of Paper," &c., according to

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the class of inventions to which they claim to be preparatory processes.

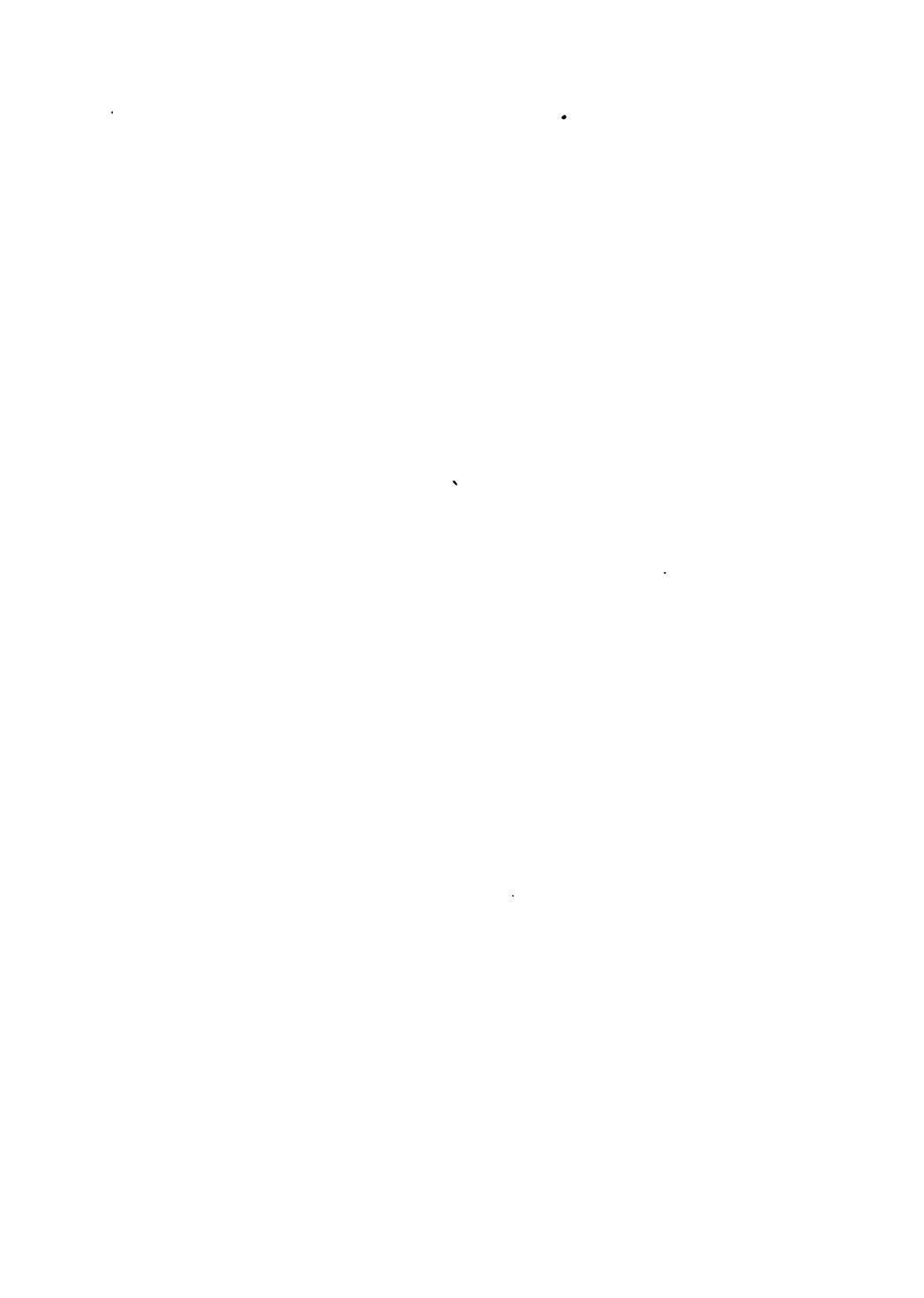
Engraving and preparing surfaces (rollers or blocks) for printing on textile fabrics, &c., are included, but not the manufacture of printing or embossing surfaces for general use.

General and domestic washing and wringing machines are reserved for a forthcoming separate series, and are not, as in the first edition, included in the present volume, with the exception of such as are specially identified with bleaching, dyeing, or printing processes.

A separate series of abridgments has been devoted to inventions relating to "Dressing and Finishing Woven Fabrics"; this work will comprehend drying and damping, mangling, smoothing, and ironing, including apparatus used in the "getting up" of fabrics and goods for sale as well as in domestic laundry work, with the exception only of washing and wringing machines, which will be formed into a distinct series as mentioned above.

H. READER LACK.

April, 1877.



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BLEACHING, DYEING, AND PRINTING CALICO AND OTHER FABRICS, AND YARNS.

1858.

A.D. 1858, January 11.—No. 45.

TAYLOR, ISAAC.—“Improvements in manufacturing metallic cylinders used in printing calico and other fabrics, and in imparting engravings to metallic cylinders used for such purposes.”

This invention is an improvement on No. 1228, A.D. 1854, and it consists:—

1st. In applying mechanical force, both internally and externally, to the seam or joint of the cylinder. The apparatus used consists in a strong external containing cylinder, divided in half longitudinally, for convenience sake, and retained securely in position by a frame or outer cylinder, so that a copper shell or metallic cylinder enclosed in the divided cylinder may be pressed outward into the same, thus making a continuous surface, and giving truth of form to the shell throughout. The force is applied by employing two or three mills or rollers mounted on the opposite sides of an axis, and caused to rotate within the copper shell and advance slowly from end to end thereof in a helical direction by means of a screw and nut, together with suitable driving gear. Or a steel die and plunger may be passed through the shell from end to end.

2nd. In obviating the difficulty experienced in putting an engraving by mill and die on thin metallic shells. The shell which is to receive the engraving is lodged within a cylinder such as is above described. Then an engraving, whether raised or depressed, upon the inner or concave surface of a curved plate or hoop or of several such plates or hoops, is

placed between the shell and the containing cylinder. Force is then applied to the interior of the shell by the means mentioned above, and the metallic crust of the shell is thus driven by pressure fully home upon the raised or indented engraving, and a perfect impression of the work is obtained upon the shell free from burr, while the true form of the cylinder is preserved.

[Printed, 4d. No Drawings.]

A.D. 1858, January 23.—No. 124.

DROUET, NICOLAS AUGUSTIN, and LECOQ, PIERRE PHILIPPE.—(*Provisional protection only*).—"Improvements in treating chloride of sodium for obtaining therefrom certain useful products."

These products consist of salts which may be employed in many instances instead of the nitrate or chlorates.

"An aqueous solution of chloride of sodium of suitable strength is saturated with ammonia, after which a current of oxygen gas is caused to pass through it; crystallization takes place, and the crystals thus obtained may serve instead of nitrate of potash for manufacturing gunpowder or other purposes, or instead of other nitrates. Or, after the solution of chloride of sodium has been saturated with ammonia, a suitable quantity of nitric acid is added to the solution, and, finally, a current of oxygen gas caused to pass through it. The crystals obtained may be employed instead of chlorate of potash or other chlorates for many manufacturing purposes, such for instance as dyeing and others."

[Printed, 4d. No Drawings.]

A.D. 1858, January 29.—No. 167.

GOODWIN, JAMES.—(*Provisional protection only*).—"Improvements in the treatment, preparation, and cleansing of textile fabrics and materials."

This invention relates "more or less" to No. 2263, A.D. 1857, "but the present improvements comprehend the treatment, preparation, and cleansing of textile fabrics and materials in general of various kinds, and whether coloured or not, as also the preparation and application of a cleansing liquor for distribution, sale, and general public and private use as a cleanser. The liquor is prepared by boiling mineral

“ coal cinders or other carbonaceous matter in water, adding
 “ a portion of chalk or other analogous substance to the
 “ liquid.” The fabrics or materials to be treated or cleansed
 “ are boiled in this prepared liquor, and the result is that
 “ they are effectually cleansed, whilst their colour is
 “ heightened and their value improved. The prepared liquor
 “ answers also as a substitute for the ‘dunging’ process, used
 “ by calico printers and others.” It is judiciously available
 “ in all or most of the routine “processes of the manufacturer,
 “ printer, and dyer, as well as for effecting economy in
 “ home washing for general domestic purposes.”

[Printed, 4d. No Drawings.]

A.D. 1858, February 18.—No. 312.

CHADWICK, JOHN.—(*Provisional protection only.*)—“Im-
 “ provements in machinery or apparatus for engraving or
 “ producing printing surfaces.”

The mechanism admits of one, two, or any number of punches, mills, or engraving tools being used simultaneously or intermittently upon the cylinder or other surface to be engraved. An intermittent or partially rotating motion is given to the cylinder, which is moved to and fro horizontally by means of a worm and worm wheel actuated by the driving gear of the machine. A slide which carries the mechanism for working the engraving tool, traverses on the bed of the machine, and is actuated by a screw shaft put in motion by the driving mechanism. To the slide is fixed a tubular rod, carrying at its upper extremity a horizontal arm fitted to a stem which slides up and down in the fixed tubular rod. One end of the arm projects over the cylinder and carries at that end a weight in which the engraving tool is held. The pressure of the engraving tool is regulated by india-rubber springs fitted within the tubular rod, and it is raised or lowered by means of a suitably-shaped eccentric or cam. The other end of the horizontal arm, which carries the engraving tool, has jointed to it a pendent weighted rod, the lower end of which is acted on at intervals by an eccentric on a spindle running parallel to the bed of the machine. An intermittent motion is given to the eccentric by means of segmental racks fitted at each end of the spindle. When the eccentric presses against the weighted rod, it turns upon its point of support, and allows the tool to rise from the cylinder. Upon

the pressure of the eccentric being removed, the weighted arm falls back to its vertical position, and the tool is brought down upon the cylinder.

[Printed, *4d.* No Drawings.]

A.D. 1858, February 27.—No. 389.

RAYMOND, JOSEPH THEODORE, and LAMBERT, ALPHONSE.
—(*Provisional protection only.*)—"Ornamenting textile fabrics."

This invention "consists in printing upon the surface or
"surfaces of the said fabrics any appropriate device or design
"in suitable varnish, size, or cement, through the medium of
"engraved blocks, plates, or otherwise, and coating the said
"surfaces so cemented or otherwise with powdered vegetable,
"animal, or mineral substances of varied colors, so as to
"cause the same to adhere to the cemented portions, and
"thereby form the pattern or design upon the fabric."

[Printed, *4d.* No Drawings.]

A.D. 1858, March 11.—No. 493.

VERDEIL, FRANÇOIS AUGUSTE.—"Improvements in treating
"madder."

Referring to No. 111, A.D. 1857, which consists in extracting the madder root with an alkaline liquid, precipitating this extract by an acid, and re-dissolving the precipitate in alcohol or wood spirit, the inventor states:—"Now according
"to my present invention I extract the root with an alkaline
"liquid and precipitate the extract as before; but in place of
"re-dissolving the precipitate in alcohol or wood spirit, I boil
"it with sulphuric acid, and in this way I obtain a product
"with which fabrics may be dyed as when garancine is used."
The invention also consists in "obtaining coloring matter from
"the madder root from which coloring matter has already
"been extracted by an alkaline liquid as before mentioned,
"and from which matter after it has been so treated no
"coloring matter has heretofore been obtained. For this
"purpose I treat it with acid, and I prefer to use sulphuric
"acid, but during this treatment it is not necessary, that the
"acid should boil. The root prepared in this manner may be
"employed for dyeing in the same way as madder is at present
"used, but when this substance is used it is not necessary to
"employ soap after the dyeing as when ordinary madder is
"employed."

[Printed, *4d.* No Drawings.]

A.D. 1858, March 23.—No. 600.

MÜLLER, HENRI LAURENT.—“Improvements in chromo-
“graphic printing.”

The invention consists in employing blocks or printing matrixes formed by the aggregation of suitably solidified pigments for printing simultaneously any suitable number of colours. This is effected by causing the colours or pigments to be brought to the solid state after the same have been mixed with suitable binding materials, such as water, gum, resin, starch, dextrine, &c., then, giving to such solidified colours or pigments suitable forms, and assembling them side by side according to the pattern required, and making use of them in this assembled form as matrices, punches, blocks, or printing discs, the surface of these matrices, &c., or of the fabric on which the coloured impression is to be taken having previously been moistened with the same liquid that has served for mixing up the colours or pigments, or any other liquid by which a suitable quantity of the colour or pigment is dissolved and thus caused to adhere to the surface to be imprinted.

[Printed, 4d. No Drawings.]

A.D. 1858, March 29.—No. 667.

JACQUIN, EDMOND AUGUSTE.—(*A communication from Henry Garnier.*)—“An improvement in preparing plates for printing.”

In order to render copper and other plates more durable,
“when the plate of copper or other comparatively soft metal
“has been engraved in the ordinary manner, a thin coating
“of iron is deposited on to it by electricity from a bath containing a solution of that metal. From the plate so prepared
“impressions may be printed by the usual method, and the
“printing may be continued until the coating begins to be
“worn through.”

“If a further number of impressions is required the worn
“coating of iron may be dissolved off from the plate, and a fresh
“coating of iron deposited thereon; afterwards the printing
“may be recommenced as before, and by thus from time to
“time renewing the coating of iron, almost any number of
“impressions can be taken from the engraved plate.”

[Printed, 4d. No Drawings.]

A.D. 1858, March 31.—No. 679.

GATTY, FREDERICK ALBERT.—“Improvements in treating certain compounds containing the colouring matter of madder.”

The invention consists in making insoluble compounds of madder, fatty matter, and the base of an earthy salt which has been used in precipitating the colour, available for printing purposes by purifying them, setting the colouring matter at liberty and rendering it soluble in alkalies. “I take 200 lbs. weight of one of the above-named compounds containing the colouring matter of madder, and mix them with about 200 gallons of water to which are added 40 lbs. of carbonate of soda. The whole is then heated by steam or otherwise, and boiled for half an hour. The mixture is then run into a filter, where it is left to drain.” “When all the liquid has drained off, the solid matter is taken from the filter and mixed with 30 lbs. of muriatic acid of commerce, with which it is left until the colouring matter which at first partly dissolved with the base is reprecipitated, and the liquid when filtered is colourless.” When the acid has produced its effect the whole is put upon a filter, where it is washed with water until free from any acid; the precipitate is then dissolved in ammonia or any other suitable alkali. I find that the best proportions are 6 oz. of ammonia of the specific gravity of 0·870 for every pound of well-drained precipitate.”

[Printed, 4d. No Drawings.]

A.D. 1858, April 7.—No. 748.

NIMMO, WILLIAM.—“Improvements in the manufacture of printed woven fabrics.”

The invention consists in “weaving figured fabrics of a peculiar description, and printing such fabrics on one or both sides, by which better zebra and other printed fabrics are produced than heretofore. For these purposes the fabrics are woven with an all-over or nearly all-over raised figure on one side, and with comparatively only a small part of the surface covered with the raised figure on the other side. The printing of such fabrics, whether on one or both sides, is to be performed in like manner to printing other woven fabrics; but it is preferred that when printing one side only

“ the side on which the raised pattern occupies the least extent
“ of surface should be printed.”

[Printed, *ed.* Drawing.]

A.D. 1858, May 1.—No. 977.

SPENCE, WILLIAM.—(*A communication.*)—“ Improvements in
“ the production and application of a material called ‘ French
“ ‘ purple,’ and in the process employed in obtaining it.”

The process of obtaining this product may be described under three heads, viz., 1, the preparation of the raw colour-producing acids (mixture of evernic, lecanoric, orsellic, erythric acids, &c.); 2, the change produced in these acids by the combined action of ammonia, air, and heat, and their transformation into colouring matter; and 3, the treatment by which the colouring matter is brought into a solid state.

The raw acids are prepared by extracting them from the lichens in various manners, as by alcohol with a subsequent distillation, or by the acetic acid of commerce; or it may be done, either with or without heat, by means of water charged with a base or basic salt, such as ammonia, potash, soda, lime, barytes, strontia, carbonates, borates, phosphates of potash, soda or ammonia, “ in a word, by means of a compound
“ capable of forming, with the colour-producing acids of the
“ lichens, soluble salts which, when separated by filtration
“ and pressure from the woody matter of these lichens, are
“ decomposed by sulphuric or hydrochloric acid in slight
“ excess, so as to set free the colour-containing acids.” The latter are collected on strainers, so as to separate the matters that are soluble and not suited to the formation of colour, and the precipitate finally is drained and dried. For the transformation of the acids, the precipitate obtained is stirred and moistened with ammoniacal liquid in quantity sufficient to dissolve it. This is then boiled, and thus is obtained a liquor which soon passes into an orange yellow, and which, exposed to the air at a temperature of about 15° to 20°C, goes through the required changes by successively passing through a series of shades. After several days, the liquor, which is exposed in open vessels heated to about 40° or 60°, assumes a purple violet tint. To bring the colouring matter into a solid state, as soon as the transformation of the acids is finished, the liquors which hold the colouring matter in solution are reunited, and saturated with sulphuric, tartaric, or other acid. An abundant

flaky kind of precipitate is formed, which is gathered on a filter, so as to be afterwards carefully washed, drained, and dried. "This precipitate, of a fine intense garnet colour, contains the colouring matter in its purest state. It is only accompanied with a certain quantity of an ammoniacal salt, with which it became impregnated at the time of its precipitation. It is thus applicable to all operations of dyeing and printing."

[Printed, 4d. No Drawings.]

A.D. 1858, May 3.—No. 981.

HARTMANN, JULES ALBERT.—"Improvements in preparing and combining colors for printing cotton cloth."

The invention relates to producing purple or violet colours on cotton cloth from the colouring matter of madder by the steaming or vaporizing process, and consists in using an organic volatile acid (by preference acetic acid) with a salt of iron as a solvent for, and means of, fixing the colouring matter of madder used to produce such purple or violet colour. 1 lb. of extract of madder ground with twice its weight of water is added to 1 gallon of acetic acid at 8° of Twaddell's hydrometer and 1 gill of the pyrolignite of iron, commonly called iron liquor, at 8° Twaddell, and well mixed. The colour is then ready for printing either by machine or block. Other colours, such as logwood black, ultramarine blues, or greens, may be printed on the cotton cloth at the same time as the madder purple or violet, "and thus new combinations of colours are obtained, which hitherto have not been produced by the old process of dyeing. After printing the pieces are steamed and washed in the ordinary way, as is well understood by calico printers, and the colours may be brightened by passing the pieces for about an hour in boiling soap water or other suitable alkalescent liquid."

[Printed, 4d. No Drawings.]

A.D. 1858, May 6.—No. 1015.

WRIGHT, JAMES.—(*A communication.*)—"Improvements in treating madder for printing and dyeing, and also in the substances used in printing and dyeing with the same."

1st. Mode of producing an extract of madder by subjecting the raw madder mixed with water to the action of a press, and obtaining the substance as a jelly from which the extract is obtained.

2nd. Instead of treating the jelly with water it may be treated with dilute sulphuric acid, or any vegetable substance containing an acid, or even common salt. The acid is then washed out and the jelly pressed and strained. Upon being reduced to the proper consistency it is ready to print with; or the water may be evaporated and a dry powder formed.

3rd. The refuse madder from the last operation is treated in a similar manner, that is, obtaining a jelly extract, using, however, less water than in the previous operation.

4th. The refuse madder remaining after these two operations is mixed with warm water and boiled; after being allowed to stand a short time a precipitate is formed, which after running off the supernatant water, is treated with caustic potash and well washed and strained. The colouring matter is precipitated from the mass of water by means of sulphuric acid.

5th. A crimson or darker shade of red colour may be obtained by taking the product of either of the two first-mentioned operations, and converting it into garancine in the usual manner.

[Printed, 4d. No Drawings.]

A.D. 1858, May 11.—No. 1051.

JOHNSON, JOHN HENRY.—(*A communication from Robert Patterson.*)—(*Provisional protection only.*)—"Improvements in "madder dyeing."

According to this invention the fabrics, "which have been "printed is suitable mordants and prepared in the usual "manner, are submitted to the action of a hot decoction of "garancine madder, water, liquid ammonia or other equivalent alkali, in the proportions of about 10 lbs. of garancine "madder to 40 gallons of water, and 1 pint of ammonia or "other equivalent alkali. After passing through this decoction, and being acted upon by it from 3 to 5 minutes, "the colouring matter of the madder will be found to be "completely fixed on those parts printed in mordants. The "addition of about 1 pint of alcohol to the above ingredients "will serve the purpose of confining the colouring matter "of the madder to those portions of the fabric printed in "mordants, and of preventing it from being absorbed by the "portions which are intended to remain white."

[Printed 4d. No Drawings.]

A.D. 1858, May 11.—No. 1056.

PARKES, ALEXANDER.—“Improvements in rollers or cylinders used for printing and embossing.”

“In constructing rollers or cylinders, when shells of metal are used on bodies, in place of making the bodies of iron as heretofore, I employ a body made of zinc, brass, or an alloy of copper, or of an alloy of iron and nickel, in combination with a suitable shell or outer surface engraved in a proper manner for printing calico and other fabrics or for embossing, and I apply German silver, and also an alloy of iron and nickel, in place of the metals heretofore used in the manufacture of rollers and shells for printing calico and other fabrics and for embossing; and in making printing or embossing rollers or shells of copper, or alloys of copper, or of German silver, I first raise a disc of either of such metals by stamping or by drawing the same through dies, and then extend the same by hammering or rolling or drawing through dies.” By this means the prejudicial effects resulting from the use of iron bodies, which have a tendency to oxidize, are avoided.

[Printed, 4d. No Drawings.]

A.D. 1858, May 11.—No. 1060.

GILBERT, JAMES MONTGOMERY.—“Improvements in the construction of cylinders and mandrils used in printing calico and other surfaces.”

The invention consists of an improved method of fixing the cylinder on the mandril, and combines a firm fixture of the cylinder with a ready means of removing it from the mandril, and also with a method of freeing the cylinder from the injurious action caused by the bending of the mandril under pressure. The improved mandril consists of an exterior shell and an interior spindle, the exterior shell being again in two pieces, one being inserted at each end of the cylinder. The interior spindle is so constructed as to be the means of drawing together the exterior shells, whilst the form given to the surfaces of these mandril shells, and to the interior surface of the printing cylinder, causes the aforesaid drawing together to result in the firm fixture of the cylinder upon the shells.

[Printed, 10d. Drawing.]

A.D. 1858, May 12.—No. 1076.

HAMILTON, JOHN.—“Improvements in the preparation and
“ use of starch for manufacturing, bleaching, and finishing
“ purposes.”

“Instead of finishing and drying up the starch, as is commonly done, the process of manufacture is carried on no further than the actual deposition or solidification of the starch, when it is at once taken for use without further preparation.” The wheat having been crushed between iron rollers is put into a “kieve” or other steeping vessel, and steeped until the separate seeds can be easily crushed between the fingers, after which it is crushed in a mill. It is then removed to a steeping kieve and washed with water to separate the gluten from the starch. The water containing the starch in suspension is then run off, and the starch allowed to deposit, and the supernatant water run off. The gluten that may have passed with the starch, and is not held in suspension by the water, settles on the top of the starch, and is skimmed off.

[Printed, *ad.* No Drawings.]

A.D. 1858, May 17.—No. 1101.

CURZON, HENRY, junior.—“Improvements in preparing
“ printed yarns.”

The invention consists in the process of steaming printed yarns for the purpose of fixing the colours, dispensing with the covering of rice hulls or cut straw and cocoa-nut fibre, materials hitherto used. A coarse thick material of cotton or wool is attached to the underside of the tray (which is unperforated) containing the yarn, sufficient space being allowed between the material and the tray to which it is attached to ensure ventilation, and thus facilitate the evaporation of the moisture which the material may have gained from the condensation of steam when the tray is removed from the steam chamber. In these trays the movable horizontal bars are dispensed with, each tray being furnished with elevated ends which project sufficiently above the level of the yarn in the tray to support the tray above. The trays are in this manner piled one above another in a suitable carriage, and when in the steam chamber, all steam which condenses immediately

over the uncovered yarn being absorbed by the coarse material, the yarn is protected from injurious droppings.

[Printed, 4d. No Drawings.]

A.D. 1858, May 18.—No. 1106.

MALLISON, JAMES, junior.—(*Provisional protection only.*)—
“Improvements in the process of, and in the machinery and
“apparatus for, dyeing yarns.”

The invention relates more particularly to the dyeing of yarns in the “cop,” but is equally applicable where the yarn is in the “hank” or “bundle.” The improvement consists
“in dyeing yarns in vacuo, which may be effected by the
“following means:—The yarn to be dyed is placed in a
“chamber or receptacle in connection with a suitable arrange-
“ment of pumps for extracting the air therefrom, and when
“the air has been sufficiently exhausted from the chamber
“containing the yarn, and a vacuum obtained, the dyeing
“liquid is to be admitted to the chamber until full, by which
“means the ‘cops,’ ‘hanks,’ or ‘bundles’ of yarn will become
“thoroughly saturated or impregnated with the dyeing liquid
“as required.”

[Printed, 4d. No Drawings.]

A.D. 1858, May 19.—No. 1113.

MACNAUGHT, WILLIAM, and CRITCHLEY, WALTER RICHARD.—“Improvements in the manufacture of copper or
“other metallic rollers or cylinders for printing fabrics, and
“in apparatus connected therewith.”

The improved roller is made into a cylinder “by the usual
“method of hammering and drawing,” but is “of less thickness
“than the ordinary roller.” At each end, and also at certain
intervals within the roller, are internal ferules having nibs for
the groove in the mandril, or helical coils of copper, or longitudi-
nal or angularly placed ribs of copper or other metal may be
used for strengthening the roller as bearings for the mandril.
The mandrils may be either of cast or wrought iron, and with
longitudinal or angularly placed ribs, or with raised bearings or
rings at suitable distances to suit the cylinder or roller, so as
to obtain or produce a lighter mandril of the strength re-
quired; or the mandril may be made in the form of a helical

coil, running either in the same or the reverse direction to the coil employed in the cylinder; when such form of mandril and cylinder are employed in conjunction, such combination forms numerous bearing points between the peripheries of the two screws or coils, and consequently, produces a very solid description of roller.

[Printed, 10d. Drawing.]

A.D. 1858, May 20.—No. 1122.

HESFORD, JAMES.—“Improvements in the construction of “ stretching machines for cotton and other woven fabrics.”

The invention relates to the stretching machines usually applied to bleachers and other mangles for widening the fabric. These consist of several ribbed slides placed around an axle, and furnished with diagonal discs to move the slides longitudinally, they are carried round by the fabric. The invention consists in making each of these diagonal discs with an internal groove, and in applying antifriction bowls to the slides. These bowls enter into the grooves of the diagonal discs, or the discs may be without grooves, and an antifriction bowl applied to each side of the disc.

Another part of the invention consists in making the guides of the slides of separate pieces, in order to facilitate repairs; the guides are connected by set screws to the slides, and work in discs fixed to the axle as usual.

[Printed, 6d. Drawing.]

A.D. 1858, May 20.—No. 1123.

BRUN, MARTIN.—“Improvements in dyeing.”

This invention relates to the dyeing of animal and vegetable fibrous materials either in the rough or manufactured state, and consists “in adding to the dyeing baths suitable quantities “ of a liquid the effect of which is to keep the baths much “ longer fit for dyeing than was hitherto the case, permitting “ at the same time suitable alterations in the colours and “ shades, and giving rise also to much faster dyes, thus “ allowing to employ in certain cases pigments of a cheaper “ nature or in less quantity as hitherto required for obtaining “ the same shades.” The liquid is obtained by dissolving tin in suitable quantities of nitric and muriatic acids, and then adding to the solution a suitable quantity of sulphuric acid

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and sulphate of zinc, or any other salt exercising the same chemical action. Of this liquid suitable quantities are added to the dye baths according to the nature of the baths and the colours or shades to be obtained. "For fibres, yarns, cloth, " or other stuffs to which the red colour known as madder or " Eugenie red is to be given, I begin by imparting to them " the ground colour by means of a vat of sandal wood, after " which I add to this vat a sufficient quantity of madder and " of the above-mentioned composition liquid." "I finally " finish the stuffs in a fresh vat with the above-mentioned " composition liquid, some tartar and a small portion of " cochineal being added thereto; and by adding again afterwards to the vat suitable quantities of madder, tartar, and " composition liquid, I may then dye at once in this vat other " stuffs to which I wish to give a scarlet or Victoria red " colour."

[Printed, 4d. No Drawings.]

A.D. 1858, May 26.—No. 1174.

GATTY, FREDERICK ALBERT.—"Improvements in treating " cotton or cotton yarns and fabrics when dyed with certain " colours."

The invention relates to the colours produced by alumina and madder, and consists in treating the fabrics when dyed with such colours as follows:—The dyed cotton yarns and fabrics are immersed in a diluted acid or a weak solution of an acid salt or salts which become acid by heating. When the fibres are well impregnated with the acid or acid solution, the excess of the liquid is removed, and the fibres dried and heated, the drying and heating after the acid solution imparting to the cotton or cotton yarns and fabrics the requisite brilliancy.

The invention may be applied after the cotton or cotton yarns and fabrics have been dyed in the usual manner without any other preparation, but it is preferred to act upon colours with which a fatty acid is combined in the way practised by Turkey red and dyers and others.

[Printed, 4d. No Drawings.]

A.D. 1858, May 29.—No. 1217.

HENRY, MICHAEL.—(*A communication from J. B. Vasseur and A. Houbigant.*)—"Improvements in and in preparing agents

“ for dyeing, preparing for dyeing, and tanning, and applying
 “ certain of the resulting products for obtaining pulp for
 “ paper and pasteboard and for the manufacture of blacking.”

The invention relates principally to the application for the above purposes of acids and chlorine to vegetable agents. For dyeing and preparing for dyeing, the inventors employ concentrated baths of (1) vegetable matters containing resinous substances and tannin, such as gall nut, sumac, female elder flowers, or others with like astringent and extractive principles, treated or not with acids or chlorine increasing the astringent energy and converting the resin into artificial tannin; (2) vegetable matters containing resinous substances but no tannin (such as hazel nut flowers, osier peel, nettle root, male elder flowers, pear tree bark, &c.) treated with acids or with chlorine; and (3) vegetable matters containing a bitter or styptic principle, such as gentian, lucerne root, and fodder plants, treated with acids or with chlorine.

[Printed, 4d. No Drawings.]

A.D. 1858, May 31.—No. 1219.

YOUNG, JOHN, and STRANG, JAMES.—“ Improvements in
 “ the manufacture of starch, gum, or dextrine, and their com-
 “ pounds.”

This invention is connected with the present series in as much as it relates to “ ‘ thickening ’ ” or ‘ paste ’ used by calico “ printers ” (technically termed “ resists ”), and it consists in employing in the manufacture of the above-mentioned substances, either whey obtained from new milk, or whey obtained from sour milk or buttermilk. The new milk is curdled by means of rennet, and the whey is separated from the curds. The buttermilk is heated to curdle it, and the whey is separated from the curds by straining.

In the Final Specification it is set forth that instead of separating the curds the new milk or buttermilk may be treated with an alkali; this treatment causes the curds “ to
 “ be held in the whey in a dissolved or minutely divided
 “ state.”

According to one plan of introducing the whey into the starch, it (the starch) is moistened with whey in proportions that are given, and then dried; or the whey may be mixed

with the starch prior to the final drying of the latter in the ordinary course of its manufacture.

According to another plan the starch is moistened with alkalized milk or alkalized buttermilk.

It is preferred to apply the whey, &c. "to the starch before its conversion in the ordinary way into gum."

In the manufacture of "pastes" with flour, the whey, &c. may be added at any stage, heat being afterwards applied to the compound.

[Printed, 4d. No Drawings.]

A.D. 1858, May 31.—No. 1221.

GIRERD, JEAN BAPTISTE, and WOHLGEMUTH, PAUL FREDERICK.—(*Provisional protection only*).—"Improvements in
" ornamental staining, dyeing, fixing designs, writing, letter-
" press and type printing and cyphering, and colors on wood
" or any other substances; also extracting, transferring, or
" discharging colors from the same."

The invention consists of fixing an imperishable stain on wood, porcelain, &c., and every description of fabric by the agency of metallic salts or oxides. Various delicate and elaborate designs being placed on the wood to be decorated, "thus effectually acting in such a manner (by the instrumentality of light and shade on the surface) as to preserve uniformly the original ground forming the drawings, shapes, or configurations as are sought to be reproduced, from the influence of daylight or solar rays, at the same time modifying any colors that may be placed or that may be existing thereon. Such result being applicable to decorations on every kind of mouldings, beadings, and frames generally, as well as household furniture, marqueterie ornaments, fancy articles, 'herein-after enumerated,' house fittings and decorations, parqueterie, musical instruments, billiard and bagatelle boards, cues, caskets, cases, boxes, time-pieces, clocks, trays, tables, flower stands, tripods, vases, and every description of earthenware and china wares, and every description of carriages, &c., when the designs are fixed thereon. We improve its general appearance by varnishing or French polishing, but when the drawings obtained upon wood are required to be transferred or applied on any other material, we, previous to fixing,

“ obtain by common pressure the transfer of the design, and
“ thus submit the reproduction to mercurial fumes, sulphu-
“ rated hydrogen, or pass it through a solution of chloride of
“ lime or any other metallic salts acting as a developing
“ agent to the colours sought to be reproduced.”

[Printed, 4d. No Drawings.]

A.D. 1858, May 31.—No. 1224.

JAEGER, HERMAN.—(*Provisional protection only.*)—“ Improve-
“ ments in dyeing wool.”

“ To this end after the wool has been cleansed from grease, it
“ is boiled in an acidulated bath composed by preference of a
“ solution of some vegetable acid, such as tartaric or oxalic
“ acid, but other acid mordants used by dyers may be em-
“ ployed if thought desirable. The wool having been thus
“ treated is immersed in a solution of murexide, where it
“ imbibes a rich purple colour, which may be changed to
“ various shades of red, or converted into a yellow, or into
“ other tints, by the subsequent applications of solutions of
“ metallic or other salts, as at present practised by dyers.”

[Printed, 4d. No Drawings.]

A.D. 1858, May 31.—No. 1225.

NEWTON, WILLIAM EDWARD.—(*A communication.*)—(*Pro-
visional protection only.*)—“ Improvements in printing and
“ dyeing textile and other fabrics.”

The invention consists of an improved arrangement of the
inking or colour rollers of machinery for producing patterns
upon textile or other fabrics. Instead of mounting the
printing and inking roller in direct contact, the fabric is
caused to pass between the printing cylinder and the colour
roller, sufficient pressure being put upon the former to cause it
to press the fabric upon the colour roller in such manner that,
owing to the elasticity of the fabric, only such portions of it
will be presented to the action of the colour roller as corre-
spond to the raised portion of the pattern cylinder.

According to another plan, the pattern may be printed by
first passing the fabric through a dye-bath, and then passing
it, under pressure, while wet, between two rollers, one with
a raised pattern the other plain. By these means the colour

will be squeezed out of those parts of the fabric which come under the raised parts of the cylinder, and a pattern of a lighter tint than the ground will be produced, the shade depending on the pressure put upon the rollers. "By interposing another fabric between the fabric to be printed and the plain cylinder, it will take up the colour expressed from the dyed fabric, and thus a second print may be obtained by the same operation, both of them bearing the same pattern, but the light parts of one corresponding to the dark parts in the other, and vice versa."

[Printed, 4d. No Drawings.]

A.D. 1858, June 7.—No. 1280.

DUNLOP, JOHN MACMILLAN.—"Improvements in apparatus for sizing fibrous materials."

This invention has relation to that set forth in No. 1285, A.D. 1858 and is therefore included in the present series of Abridgments.

The squeezing rollers employed in sizing machines are covered with vulcanized india-rubber or with hard india-rubber as may be required. The elastic covers are vulcanized in moulds and upon mandrils adapted for the purpose. The hard covers "are vulcanized upon the rollers themselves placed in suitable moulds, the covered rollers being afterwards turned or ground as required."

The above-mentioned moulds consist of two or more parts, with longitudinal planed joints that are bolted together. The bore of the cover is formed by a concentric mandril or core and turned collars fitted thereon according to the length required. By means of a chuck with an expanding holder and screws in connection therewith, screwed rings are placed in the ends of the elastic cover, one ring in each end. The cover with the two rings in it is then removed to an apparatus with frames and a longitudinal screw and nut, by means of which the cover is expanded and the roller is forced into it; water under pressure is used to expand the cover between the rings, and an exit tap allows the water to escape as the roller is forced in. In another arrangement, an air-tight box in connection with a vacuum is used to expand the elastic cover. In either case the cover collapses and tightly encircles the body of the roller; the screwed rings are then withdrawn.

An ordinary slide lathe and files or grindstones are used to bring the rollers to their required size and smoothness.

Similar arrangements are used to finish the hard india-rubber rolls.

[Printed, 10d. Drawing.]

A.D. 1858, June 8.—No. 1285.

DUNLOP, JOHN MACMILLAN.—“Improvements in bowls or rollers used in machines for printing fibrous materials.”

The invention consists in covering these bowls with vulcanized india-rubber or other elastic material, by placing them in moulds similar to those described in the Specification of Dunlop's Patent, No. 1280, A.D. 1858. When it is necessary to have the india-rubber elastic, and at the same time adhering firmly to the bowls, the latter are covered with a shell of brass or other metal for which the vulcanized india-rubber has an affinity, or are made entirely of such metal. When the india-rubber is required to be hard, the bowls are constructed as in No. 1280, A.D. 1858. “Whether the bowls or rollers are covered with hard or elastic india-rubber, the surfaces are afterwards to be turned or ground according to the processes or one of them described in my said former Patent.”

[Printed, 4d. No Drawings.]

A.D. 1858, June 9.—No. 1297.

GATTY, FREDERICK ALBERT.—“Improvements in dyeing cotton and other fibrous materials and fabrics.”

The invention consists in applying for this purpose the colouring matter contained in the soap waters or clearing liquors of dyers and printers (principally those of Turkey red dyes), in which cotton or other fibrous materials, dyed with madder or garancine have been washed, cleared, or brightened, “After the dyed materials are removed from the soap or clearing bath, I precipitate the colouring matter along with the fatty matter, by adding an acid in such proportions as to render the liquid slightly acid.” “I then separate the liquid from the precipitate by filtering or otherwise. When all the liquid is drained off, the precipitate is removed from the filter, and mixed with ammonia or any other suitable alkali in such proportions as to render the whole

"soluble in water, without, however, containing an excess of the alkali." "In this state, the colouring matter is ready for dyeing mordanted cottons, or other fibrous materials or fabrics in the same way as when garancine or other dye materials are used, as is well understood by dyers and printers." Or the soap water and clearing liquors may be precipitated with a solution of an earthy or metallic salt, provided the precipitate be treated according to the inventor's prior invention, No. 679, A.D. 1858.

[Printed, 4d. No Drawings.]

A.D. 1858, June 11.—No. 1330.

CHEAVIN, SQUIER.—"An improved preparation or combination of mineral substances, applicable for use as a pigment, cement, or mastic, or to be used either alone or in combination with other well-known materials for washing, scouring, cleansing, or bleaching purposes."

The mineral substances employed for the above purposes are red or hæmatite iron ore in combination with the slag, cinder scale, or refuse, obtained from the rolling or working of iron in iron works. These ingredients, when ground, may be either combined with oil, turpentine, &c., and used as paint, or mixed with water and used as a cement or mastic. The iron slag, cinder, or scale may also be combined with soap or other analogous substance or suitable liquid, and employed in the operations of scouring, washing, cleansing, or bleaching. For this latter purpose, 2 to 4 lbs. of pulverized slag are added to 10 or 12 gallons of water. The slag has the property of preventing the scum from rising to the surface of the water, "which, therefore, when drawn off for use, will be found quite clear and liable to stain or discolour any fabrics" immersed in it.

[Printed, 4d. No Drawings.]

A.D. 1858, June 15.—No. 1349.

MASSON, LOUIS CASIMIR STANISLAS, and DE LA MORIÈRE, FELIX.—"Improvements in the manufacture of woven fabrics with coloured patterns."

The invention consists in suitably printing the threads are to serve as the weft, so that by weaving with any of

the ordinary methods with these coloured weft threads, tissues may be obtained presenting any suitable coloured pattern. For this purpose, the weft, after having been wound from the bobbins on to a suitable reel, is taken off therefrom, and stretched out so as to form one or more layers of parallel threads; on these layers, any suitable number of colours are printed according to the pattern to be obtained on the tissue, suitable bench-marks being formed to serve as guides during the weaving, which may take place "by any suitable means" so as to make this method applicable to the weaving of any "sort of tissues and patterns, whatever may be the textile materials and colours made use of."

[Printed, 8d. Drawing.]

A.D. 1858, June 19.—No. 1383.

HEWITT, SAMUEL.—"An improved application of printed designs to cotton and other fabrics," also "improvements in the treatment during the processes of printing and finishing such fabrics."

The invention consists in printing the design on both sides of the fabric, and dyeing with fast colours, in imitation of woven goods for making articles of wearing apparel. "The processes of dyeing and soaping these fabrics are similar to those hitherto adopted when treating ordinary printed calico, but the finishing is effected by passing the fabrics through a shearing machine and between calendar rollers, by which the nap is slightly raised and a soft finish obtained. These fabrics have every appearance of woollen cloth, and require no linings or facings when made up into garments." The invention also consists in printing one pattern on one side of the fabric and another on the other, for curtains, hangings, and other articles, and dyed up or made fast colours, which obviates "the necessity of having another piece for lining or facing, as now required and used."

[Printed, 4d. No Drawings.]

A.D. 1858, June 22.—No. 1407.

GALLOWAY, WILLIAM, and GALLOWAY, JOHN.—"Improvements in machinery for cutting, bruising, chipping, and rasping, and otherwise treating or preparing dyewoods and roots, or other vegetable substances."

The invention, which is well adapted for cutting madder roots, "which are now generally bruised or crushed under "edge-stones," consists of a vessel somewhat similar to a pug mill, fitted with knives across its diameter, or nearly so, commencing within a few inches of the bottom, and repeated at intervals of a few inches as far up the vessel as may be found necessary. Each story of knives is fixed at angles, right or at an angle to those beneath. A vertical spindle is mounted in the centre of the vessel, and carries cross knives of such length as to be nearly equal to the diameter of the vessel, and at such distances as just to clear in revolving the upper surface of the fixed knives. The roots or substances cut by the knives fall through an adjustable aperture into a sifter; those parts not sufficiently cut pass out at the end of the sifter, and are again placed in the mill; or after the material has been to a certain extent cut in the mill, it may be finished by bruising under the edgestones, millstones, or rollers.

In some cases the operation is conducted in a machine somewhat similar to the hay-cutting machine or the "chip "plate" for dye woods, or the angular rasp barrel described in No. 1132, A.D. 1856.

[Printed, 6d. Drawing.]

A.D. 1858, June 23.—No. 1414.

BARLOW, SAMUEL. — "Improvements in machinery or "apparatus for bleaching or cleansing textile fabrics or "materials."

The object of the invention is to obtain a quicker and more perfect circulation of the bleaching, bowking, or cleansing liquor through the goods, and more efficient cleansing thereof. The apparatus consists of a pipe or pipes, placed in a kier or vessel, and fastened on a plate or grid of iron or other suitable material resting on the bottom. The pipes are perforated with holes to within a short distance of the bottom of the kier, and the lower plate on which they are fastened is perforated with holes all round the lower edge. It can be used when the keirs work in pairs, or where a liquor vessel is attached to or forms part of a single kier. When the kiers are filled with goods, and the bleaching, bowking, or cleansing liquor run in, the improved apparatus causes a circulation of such liquor throughout the whole of the goods simultaneously *from the perforated pipes as well as from above*, "instead

“ the comparatively slow circulation got by forcing the liquor from above through the solid mass of goods as now used.”

[Printed, 1s. Drawings.]

A.D. 1858, June 23.—No. 1421.

BUMNEY, ROBERT, MELLOR, JAMES, and MACDONALD, WILLIAM STEVENSON. — (*Provisional protection only.*) — “ Improvements in dyeing and printing cotton, wool, silk, and other materials and fabrics.”

The invention refers to dyeing or printing with colouring matters derived from uric acid (murexide for instance), and consists in a method of preparing cloth or other material for the reception of the colouring matter, so that it may become fast. “ For this purpose we employ salts of metals dissolved in caustic alkalis, as, for instance, a solution of carbonate of lead in soda or potash, or we apply the salts of metals and alkalis separately. We also pass the cloth or other material through dilute sulphuric or other acid, and then treat it with an alkali or alkaline salt, as silicate or plumbate of soda, to neutralize remaining acid. The colouring matter is then applied as in ordinary printing and dyeing, and subsequently we apply a coating of oleaginous substance.”

[Printed, 4d. No Drawings.]

A.D. 1858, July 2.—No. 1484.

MORRIS, JOHN.—(*Provisional protection only.*) — “ An improved construction or improvements in the construction of copper rollers or cylinders for printing fabrics.”

The invention purports to render these lighter and cheaper. It consists:—1st, in boring out the cylinder to fit the usual size of the mandril, and then enlarging the bore at each end, leaving the middle untouched; at each end a ring is fixed, bored to fit the mandril, which is inserted by pressure and secured by closing over a portion of the end of the cylinder, or by other means. Or the cylinders are formed and finished “ in the ordinary manner,” and portions of their interior are then bored or turned out. 2nd, in fixing, supporting, or strengthening copper rings in thin rollers or cylinders for printing fabrics, such rings being forced into their respective places by pressure at the time such rollers or cylinders are expanded by heat. After the rings are fixed, the rollers or cylinders may be placed in the machine to cut rings to

the exact bore required to fit the mandril, and to form the "nib" or part which fits into the groove formed in the mandril.

[Printed, 4d. No Drawings.]

A.D. 1858, July 7.—No. 1524.

CLISSOLD, WILLIAM.—"Improved machinery for cutting or rasping dye woods."

"In the reduction of dye woods to powder, in order to obtain the extract therefrom, it has been difficult to prevent the formation of chips, which fall with detached fibres and mix with the dye-wood dust. To avoid the waste of material arising from this cause, and also to facilitate the reduction of dye woods to fine particles, is the object of the present invention, which relates to a novel description of rasping machine, wherein the block or log to be reduced to fine particles is caused to rotate while under the action of the cutting edges, and thereby to present a constantly varying surface to the action of the rasping or cutting edges."

[Printed, 6d. Drawing.]

A.D. 1858, July 14.—No. 1583.

CHAPUSOT, FRANÇOIS, and AVRIL, VICTOR.—(*Provisional protection only*).—"Improvements in producing a more or less perfect vacuum, and applying the same to industrial purposes."

Among the useful purposes to which the invention is applicable are "the filtration and distillation of liquids," "the drying or dyeing of fabrics and textile materials," and "the preparation of pharmaceutical products."

The invention is based on the principle of Torricelli, viz., the equilibrium existing in a barometric tube between the chamber and the column of liquid, "making use of a larger barometric chamber or vessel, say of some cubic feet, and filling the same with water or other suitable liquid, then drawing off this liquid through a suitable outlet pipe with proper stop-cock." "The barometric vessel we prefer is made from sheet iron, with cast-iron top and bottom. The stop-cock is constructed in such manner as to allow of a very gradual opening of the pipe, and we use an articulated hose for putting the vessel in communication with the matter to be acted upon by the vacuum, so that the entire

“ operation consists in filling the barometric vessel with water
“ or other suitable liquid, open the stop-cock in order to let
“ the liquid run out of the vessel, turn the cock and close
“ the vessel in order to retain the vacuum thus formed in the
“ vessel; and, finally, bring this latter by means of the hose in
“ direct communication with the liquid matter to be acted
“ upon, or with any other vessel in which a vacuum is wished
“ to be obtained.”

[Printed, 4d. No Drawings.]

A.D. 1858, July 20.—No. 1632.

CHADWICK, JAMES.—“ Improvements in the application of
“ certain woven fabrics to printing purposes.”

“ I take what is generally known as woollen bunting or
“ other suitable woollen woven fabric, and by means of
“ dissolved caoutchouc or other suitable cement I attach
“ or unite two or more folds of the said fabric together, and,
“ if desirable, I introduce a layer of cotton, linen, or a
“ mixture of cotton, linen, or wool, or similar materials
“ between the folds of the woollen cloths to strengthen them,
“ and I thus make a woollen waterproof fabric or a water-
“ proof fabric made of a mixture of wool, cotton, or linen
“ suitable for printing purposes, and intended to be used
“ for what are generally termed ‘back cloths’ for machine
“ printing, and can be used with blankets and greys or not,
“ which fabric or fabrics can be washed continuously and
“ dried after each passage from and before its return to the
“ machine.”

[Printed, 4d. No Drawings.]

A.D. 1858, July 26.—No. 1685.

HOPE, JOHN.—“ A new and useful mechanism or apparatus
“ for supporting and adjusting a graver of a machine for
“ engraving the surface of a calico printer’s roller preparatory
“ to the same being etched.”

This mechanism is to take the place of the usual graver
lever in the said engraving machine, and is to be fastened to
the carriage employed to support such graver lever. It is also
to extend from the said carriage over and partly round the
roller to be engraved. It consists of a curved slotted arm,
stand, or bar affixed to the movable carriage by means of a

clamp. The tracer or graver carriage is constructed in two pieces, one of which rests and slides on the top of the bar, and has a clamp by which it can be fixed at any part of the bar. The other piece has a cylindrical part and a bifurcated portion; the cylindrical part slides vertically in the aperture of the upper piece, and can be clamped therein so as to suit any diameter of roller. The bifurcated part carries the graver lever and the weighted lever. Another arm is adjustable on the axis of the graver lever, and a slide is placed on the stop lever connected with the apparatus by which the tool is raised from the surface of the roller. The weight on the weighted lever is made in two parts, so that either outlines or ground lines of a figure may be engraved.

[Printed, 1s. Drawings.]

A.D. 1858, July 28.—No. 1697.

KELLERMANN, ARNAULD. — “The employment of new “vegetal substances for dyeing, and especially to replace “cochineal dye.”

The substances employed are the flowers and leaves of the elm tree (*ulmus*). The flowers produce a red and a green dye which may be used as a substitute for the dyes of those colours obtained from cochineal. The leaves produce a yellow dye. These colours may be applied to all textile substances and to all tissues. “The extraction of the colouring matter and its “use is practised and effected in the usual way well known “to dyers, and by mixing the flowers and the leaves, or using “them separately, I obtain a great variety of either simple or “compound flowers.” The gathering of the flowers of the elm should take place as soon as the bud turns red, and before they are entirely open.

[Printed, 4d. No Drawings.]

A.D. 1858, July 28.—No. 1702.

GILBEE, WILLIAM ARMAND. — (*A communication.*) — “Improvements in the preparation of hydrated oxide of chromium.”

The invention consists in certain processes for preparing this substance, which is of a fine green colour, and is applicable to painting, colouring, or printing textile and other materials. It may be mixed with any of the other colours or mordants,

and is obtained as follows :—1st, by raising to a dark red heat a mixture consisting of one part of bichromate of potash, and three parts of boracic acid, throwing it into water and washing it so as to completely remove the borate of potash ; 2nd, by replacing the bichromate of potash used in the first preparation by chromate of soda, prepared by double decomposition with nitrate of soda and neutral chromate of potash, or with nitrate of soda and a mixture of neutral chromates, and soda and potash obtained by saturating the bichromate of potash with carbonate of soda.

[Printed, 4d. No Drawings.]

A.D. 1858, August 5.—No. 1789.

NEWTON, WILLIAM.—(*A communication.*)—(*Provisional protection only.*)—"An improved mode of ornamenting textile fabrics."

The invention has for its object to produce ornamental designs upon lace or net or such like fabrics by the application of various colours, principally to the figured or ornamented parts thereof. "I prefer to use for this purpose mineral colours, such for instance as those prepared from metals, and which may by means of a suitable mordant be set fast in the fabric so as to resist any amount of washing. The designs so applied to the fabric may consist of flowers, fruit, arabesques, animals, landscapes, figures, escutcheons, armorial bearings, or any other kind of designs or devices. The colour may be applied to the fabric to be ornamented either by means of brushes or by printing, or in any other suitable manner."

[Printed, 4d. No Drawings.]

A.D. 1858, August 9.—No. 1816.

SPENCE, WILLIAM.—(*A communication.*)—"The precipitation of purple colouring matter by chloride of calcium."

Instead of the powerful bases, such as lime, magnesia, potash, soda, barytes, strontium, "heretofore" employed in the manufacture of orchil, or in the processes for fixing colouring matter on tissues, metallic oxides are used, and particularly lime in the state of a salt, "but with quite another object." The colour is extracted and developed according to Spence's Patent for French purple, No. 977, A.D. 1858. In order to

extract and separate the violet colouring principle in its purest state, and freed from the pale red colouring matter which accompanies it, there is added to the ammoniacal liquor a suitable quantity of chloride of calcium, which gives rise to a double decomposition, first an insoluble precipitate which contains the violet matter, secondly, a solution more or less coloured in which is found all the pale red matter. The precipitate is gathered or collected on a filter, washed in water, and dried, when it has the appearances of light indigo. For its use in dyeing it is sufficient to dilute it with suitable proportions of water and quantities of acid necessary to saturate the lime which is found in it. "The acids which may be used for the purpose are principally sulphuric and oxalic, although any acid may be employed of sufficient energy to seize upon the base."

[Printed, 4d. No Drawings.]

A.D. 1858, August 13.—No. 1845.

NORTCLIFFE, WILLIAM BEAUMONT.—"An improvement in dyeing, woollen, worsted, cotton, silk, linen, and other textile fabrics and fibrous substances."

The invention consists in the employment of nitrate of copper in combination with the extracts of logwood and fustic, or other yellow colouring matter, with or without *terra japonica* as a first process; and in the employment of chromate of potash as a finishing process. The whole operation is performed in two vats. Vat No. 1 is composed of nitrate of copper with a solution of the extracts of logwood and fustic, or some other colouring matter, and in some cases a proportion of *terra japonica*. The fabrics are worked in this vat for about half an hour at a heat varying from 50° to 100°. They are then taken out and the superfluous liquor removed therefrom by squeezing rollers or other suitable means. They are then placed in vat No. 2, which is composed of a solution of chromate of potash (for some shades a little sulphate of copper is added), and worked as in vat No. 1.

[Printed, 4d. No Drawings.]

A.D. 1858, August 14.—No. 1860.

LISTER, SAMUEL CUNLIFFE, and WARBURTON, JAMES.—"Improvements in dying wool, hair, cotton, flax and similar

“ materials, also yarns and textile fabrics made from such
“ materials, also in dyeing and tanning other substances and
“ materials : also in washing wool and in discharging the gum
“ from silk.”

The improvements consist in dyeing in vacuo. The fabric is placed in an air-tight vessel, the air exhausted, and the colouring matter admitted. If it be necessary to immerse the goods several times in the same or different colouring liquor, a fresh vacuum is made, and the colouring matter admitted as often as required. “ When necessary we admit steam to
“ maintain a proper temperature and to fix the colours, or the
“ pan or other vessel may be heated by fire ; also in some
“ cases we use a force pump to force in the dyeing liquor.
“ The force pump may be used without the vacuum, so as to
“ dye under pressure, but we prefer first making a vacuum
“ and then forcing in the liquid. The same process will
“ answer equally well for tanning. The air being exhausted,
“ the tanning liquid is forced into the vessel and withdrawn
“ and a fresh vacuum made as often as required. When
“ washing wool and discharging the gum from silk we adopt
“ a similar plan. The soap and water or other scouring
“ material is forced in and withdrawn as above described.”

[Printed, &c. No Drawings.]

A.D. 1858, August 14.—No. 1864.

FOROT, LOUIS ALEXANDRE.—“ A new mode of ornamenting
“ fabrics,” and improvements “ in the apparatus connected
“ therewith.”

The invention consists in the manufacture of a new kind of fabric composed of threads of silk or other fine material glued mechanically or by hand upon paper or any kind of material, and in ornamenting the fabric so manufactured. “ This is done
“ by means of a cylinder of suitable length and diameter,
“ upon which paper or the material is fixed. One or several
“ bobbins, or even a comb containing a certain number of
“ threads, are supported above the cylinder by means of a
“ screw or otherwise. The paper or material placed upon the
“ cylinder is glued by means of a sponge or otherwise, and
“ the cylinder in turning communicates the movement to the
“ screw, which distributes the silk or other material so that

“ it will be glued spirally upon the cover of the cylinder, and
“ when the operation is finished the fabric is separated from
“ the cylinder by means of a knife. It will be understood
“ that by placing above the cylinder several screws wormed in
“ opposite directions for distributing threads of silk or other
“ material of varied colours, it will be possible by the same
“ means to obtain fabrics of varied colours and patterns.”

[Printed, 4d. No Drawings.]

A.D. 1858, August 30.—No. 1959.

BRAZIL, JOHN, and MCKINNELL, JOSEPH.—(*A communication.*)—“ An improved method of indigo blue dyeing.”

The improvement consists in dipping two pieces of fabric (placed back to back) simultaneously into the indigo dyeing liquid, so that the two back surfaces of the cloth may be in close contact and unexposed to the atmosphere, allowing only the two outside or face surfaces to be exposed to the oxygen of the atmosphere, which has the effect of causing the outer or face surfaces to absorb a greater quantity of the indigo or dye than the back or inner surfaces, by which method of dyeing the face sides of the cloth will present a dark blue and the back sides a light blue colour, and consequently an economy in the dyeing is effected.

[Printed, 4d. No Drawings.]

A.D. 1858, August 30.—No. 1961.

BRAZIL, JOHN, and MCKINNELL, JOSEPH.—“ An improved
“ method of indigo blue dyeing.”

The improvement consists in printing or covering the face side of the fabric with certain chemical substances, in order to draw or attract the indigo in the dye vat more to the face than to the back of the fabric, so that when finished the face side shall present a dark blue and the back a light blue colour.
“ For this purpose we employ a salt of manganese, preferring
“ the sulphate or muriate of manganese; but it will be
“ obvious to chemists practically acquainted with indigo blue
“ dyeing that other analogous chemical substances will have
“ a similar effect. This salt of manganese or other chemical
“ substance is to be printed ‘padded,’ or entirely cover one
“ face or side of the fabric only, so as to cause the indigo in
“ the vat to impregnate or become attached more quickly to

" one side of the fabric than to the other, by which method a considerable saving is effected."

[Printed, 4d. No Drawings.]

A.D. 1858, September 2.—No. 1992.

WALKER, JOSEPH, and BARNES, JAMES.—"Improvements in blankets and lappings for machine and block printing, and other similar purposes."

According to this invention, a blanket or lapping having a cotton-pile pressing surface is substituted for "the ordinary plain cotton surfaces hitherto used. These improved blankets or lappings may be constructed by cementing together by means of india-rubber solution or other waterproof cement, two or more thicknesses of cotton fabric, the outer or pressing surface of such combined fabric having a pile raised thereon by any of the well-known methods adopted for pile raising." "The chief advantage to be derived from the use of pile surface blankets in machine and block printing is increased elasticity in the direction of the thickness of the blanket, whereby a more yielding and even pressure is distributed over the surface of the form."

[Printed, 4d. No Drawings.]

A.D. 1858, September 7.—No. 2025.

LARSONNIEB, GUSTAVE, and BLANCHE, AUGUSTE.—"Improvements in block printing by hand on tissues, paper, or other suitable fabrics."

The invention consists of a mechanical arrangement for guiding the printer in placing the printing block on the surface of the tissue, paper, or other fabric on which the impression is to be effected. For this purpose the bench or printing table is furnished along its longitudinal sides with a rail or sockets, tappets, and regulating screws for allowing a movable rule to be fixed crosswise on the table and when required to be moved forward, at equal distances apart, over the latter. The rule serves as a guide for the printing block, which is provided on one of its sides with two projecting pin points, one of which may be inserted in an angular notch or serration of a plate fitted to the side of the rule, whereas the other point is caused to rest on a projecting fillet of the plate; the latter being provided with a row of the said notches placed

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at equal distances apart, allows the printer to place his block at once in the required position upon the fabric stretched on the table. The impression takes place in the usual manner.

[Printed, 8d. Drawing.]

A.D. 1858, September 9.—No. 2049.

CLARK, WILLIAM.—(*A communication from Frédéric Kuhlmann.*)—(*Provisional protection only.*)—"Improvements in materials for dyeing and printing."

The invention applies particularly to the manufacture and sale as a commercial product, to be directly employed in dyeing and impressing or printing, of the tartrates, citrates, oxalates, and chromates of baryta and the ferrocyanide of barium, by liberating their acid by means of the addition of a quantity of hydrochloric or sulphuric acids sufficient to saturate the baryta. The hydrochloric and sulphuric acids diluted are first mixed with the salts of baryta to produce decomposition, and the whole mixture may then be placed in the bath of dye, or may be used for impressing or printing. In all cases, if sulphuric acid be used, the sulphate may be separated by filtering or precipitation.

[Printed, 4d. No Drawings.]

A.D. 1858, September 13.—No. 2071.

THOMSON, WILLIAM.—"Improvements in bleaching yarn, warps, and similar materials."

The yarn, warps, &c., are passed, previous to being sized, through a weak solution of chloride of lime, or chloride of soda, or other bleaching agent, and then either over hot cylinders to dry the material, or through a steam chest: either of these modes will cause the bleaching liquor to act on the yarn and to bleach it. The yarn, &c., is then passed through rollers in water to wash off the lime, soda, or other agent, after which it is ready for sizing.

[Printed, 4d. No Drawings.]

A.D. 1858, September 18.—No. 2104.

OSTERMOOR, GERHARD.—(*Provisional protection only.*)—"Ornamenting boas, victorines, and muffs."

“The ornamentation of the said articles made of velvet or plush is executed by pressing or embossing figures, ornaments, or devices on them in the ordinary manner, or I perform the same during the process of printing or weaving, by printing the figures on them, or weaving them in during their manufacture.”

[Printed, *sd.* No Drawings.]

A.D. 1858, September 18.—No. 2106.

LUIS, JOZÉ.—(*A communication.*)—“A new manner for applying centrifugal force in the manufacture of the fecula of potatoes, of starch, of yeast, of porcelain paste, of paper pulp, and ultramarine, and the apparatus for carrying out the same.”

On the interior mantle of a perforated sheet-iron drum 30 to 36 in. in diameter, and 10 or 12 in height, is fixed a thickness of metallic coarse cloth, or a tissue of hosier or wicker. “About and on this sheet iron I put a tissue made of linen, wool, or cotton sufficiently fine to retain the fecula or starch which the water filters through. From this disposition all the vertical part of the drum becomes the strainer or part through which the water runs off.” The *modus operandi* is as follows :—The fecula of potato rasped and sifted is placed at the bottom of the water, which serves to draw it to the bottom of the sieve. Fresh water is then added, the fecula allowed to settle, and the process is repeated three or four times. The fecula being in suspension in the water of the last washing is made, by means of a pipe and cock, to run into the drum, which is made to revolve slowly until it is sufficiently full. The cock is then closed, and the valve made to revolve at its maximum velocity, when the fecula is deposited in circular layers on the tissue in the interior of the drum, at the same time that the water with which it is mixed escapes by the openings in the drum. At the end of eight or ten minutes the fecula is sufficiently dry to be carried to the core-stove, or drying place, without having recourse to kilns, &c. Ultramarine, porcelain paste, lac, or lacker pulp for paper, &c., are treated in the manner above described.

[Printed, *sd.* Drawings.]

A.D. 1858, September 22.—No. 2127.

HOPE, JOHN.—“An improved calico printing roller.”

This roller, termed a “composite printing roller,” is constructed as follows:—The forming mandril is placed concentrically or thereabouts within a “foundation tube” of cast iron, which has an internal diameter about one inch larger than the mean external diameter of the mandril. The entire space between the tube and the mandril is filled with a “mandril connection” or composition of coal-tar, pitch, sulphur, and caoutchouc. In order to prevent the cast-iron foundation tube from being moved or turned on its caoutchouc connection, the inner surface of the former may be scored, indented, or otherwise roughened. As the mandril is usually constructed with a groove extending longitudinally throughout that part of its outer surface which is within the roller, the composition is forced into such groove, so as to form a feather or spline corresponding in shape to the groove. This serves to prevent the rotation of the roller on the mandril. The coppering, covering, or shell is applied to the foundation tube after insertion in the latter of the mandril, as above described.

[Printed, 8d. Drawings.]

A.D. 1858, September 22.—No. 2130.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from J. M. Firnstahl.*)—“Improvements in apparatus for printing “shawls and other articles.”

This apparatus is constructed as follows:—One or more impression tables and colouring tables are employed, one or more of them being fixed, and one or more movable. The movable tables, whether impression or colouring tables, are each supported upon a horizontal frame or platform, which rests upon rollers carried at the extremities of levers. These levers are mounted eccentrically upon levers, and have their opposite extremities connected by links to other levers, which are again connected by levers to the end or ends of a beam or beams. When the beams are made to rock, the several links and levers impart an upward or downward motion to the

platform or frame, and through it to the table, the motion being rendered smooth and easy by the rollers on which the platform or frame immediately rests. The printing surfaces are supported by wheels which run on rails, and are successively forced up to them by means of the parts before described. Provision is made for fixing the printing surfaces before the shawl, &c., extended upon the impression table, is brought up against it, and also for adjusting the shawl and bringing the desired portions of it successively beneath the same printing surface. When the colouring table is fixed, a colour roller is connected to it and arranged in such manner that it will turn when the printing surface moves over it in one direction, and remain at rest when the surface moves over it in the opposite direction.

[Printed, 10d. Drawing.]

A.D. 1858, October 20.—No. 2340.

STIEBEL, LEOPOLD, and GLASSFORD, CHARLES FINLAY OLIPHANT.—(*Provisional protection only*).—"Improvements in "machinery for moulding washing blues and other materials "while in a plastic state."

The invention relates to certain mechanical arrangements for manufacturing ultramarine, Prussian, and indigo blues and other materials, while in a pasty or plastic state, suitable for being moulded into cakes, or other forms of a spherical, or any other shape, designed for such or like articles. "In "one form of machines made to combine our said improve-
"ments, we effect the moulding or shaping of the prepared
"pastes or other plastic materials by means of dies formed
"of several pieces or parts, the lower die having a central
"portion that rises after each stroke sufficient to relieve the
"material from the lower die worked by an excentric or
"crank motion." The dies while in use are kept heated by jets of gas. "The material is supplied to the dies as required
"by means of a cylinder having a lower aperture through
"which the material is caused to exude by the action of an
"archimedean screw. The moulded material may be caused
"to descend and be dusted in a fluted channel, or both or
"either operations be very variously modified."

[Printed, 4d. No Drawings.]

A.D. 1858, October 29.—No. 2423.

MORRIS, JOHN. — "Improvements in the manufacture of
"rollers or cylinders for printing fabrics."

Instead of fitting the rollers to a fac-simile of the mandril by the process of hammering or swaging, the cylinders are by this invention fitted by a "drawing" process. The invention is accomplished in two ways; 1st, by having the interior bore of the roller or cylinder left smaller than that part of the mandril upon which it is to be fitted (the mandril being generally taper), and elongating the roller or cylinder on the mandril by the drawing process till it covers that part upon which it is to fit; 2nd, by having the interior bore of the roller or cylinder left larger than that part of the mandril upon which it is to fit, and closing in the roller or cylinder by the drawing process till it fits accurately upon the mandril.

[Printed, 10d. Drawing.]

A.D. 1858, November 4.—No. 2466.

MABLEY, WILLIAM TUDOR.—(*A communication*).—(*Provisional protection only*).—"Improvements in printing and dyeing woven fabrics."

The invention relates to the "process termed in the trade
" 'dunging,' and which is now conducted by using certain
" silicates, arseniates, and other chemical salts. The improve-
" ments consist in combining with these chemicals brewers'
" wort or other saccharine matter: or an extract of Iceland
" moss, gum, or other mucilaginous substance is employed."

[Printed, 4d. No Drawings.]

A.D. 1858, November 15.—No. 2562.

DAVIES, GEORGE.—(*A communication*).—"Improvements in
" the process of finishing piled fabrics, and in apparatus
" employed in such process."

The invention refers principally to the finishing of astracan, and consists:—1st. Of a machine for friezing the pile or nap. 2nd. Of the process of fixing and pressing the "curl," dyeing, embossing, and printing the fabric. After the curl is permanently fixed, the piece is immediately dyed the colour and shade required. If it be desired to emboss a pattern on the

fabric, it is rolled on to the perforated roller used to fix the curl, placing between each layer cards or pasteboards perforated with the required patterns and enveloped in calico. The fabric thus prepared is then submitted to the action of steam in a closed vessel, which has the effect of embossing the design on the curled pile or nap. The piece is then unrolled, extended to its full length, and finally dried.

[Printed, 10d. Drawing.]

A.D. 1858, November 17.—No. 2579.

GATTY, FREDERICK ALBERT.—“Improvements in producing certain colours on cotton, linen, and silk fabrics.”

The invention relates to madder reds and madder pinks produced by the steaming process, and consists in the application of acetic or pyroligneous acid or other volatile organic acids in combination with the colouring matter of madder and a salt or salts of alumina as a means of fixing the said colours, by steaming, on cotton, linen, and silk fabrics. After steaming, the fabrics are washed, and may be brightened by passing them through boiling soap water. The concentrated solution of the colouring matter is made by infusing garancine, fleur de garance, or any other substance or extract containing the colouring matter of madder, for about a quarter of an hour in boiling acetic or pyroligneous acid, and then filtering and pressing it while hot.

[Printed, 4d. No Drawings.]

A.D. 1858, November 19.—No. 2613.

HOWE, GEORGE, and NORTON, JOHN.—“An improved method of boiling water or worts for brewerys, distilleries, &c. by steam, or for heating rooms, public buildings, churches, chapels, factorys, &c.”

“We use a steam boiler of any kind or description, or fix our apparatus to any ordinary boiler which may be in use, by attaching an outlet pipe or pipes to the same with taps and valves,” “which pipe or pipes conducts the water or steam into a coil pipe, which may be made of any metal, and which coil pipe is introduced into a boiling pan or vat, thereby causing the liquid in the pan or vat to boil quickly.” “The pipe is then carried from the pan or vat into the boiler,

“ thereby returning any condensed or waste steam, at the same time causing a great saving of coal and preventing loss of water with much less chance of explosion. This plan is adapted for drying houses of every description, bleach yards, sugar houses, soap works, and similar purposes.”

[Printed, 8d. Drawings.]

A.D. 1858, November 25.—No. 2682.

BURTON, WILLIAM.—(*Provisional protection only.*)—“ Improvements in preparing colouring matter for dyeing.”

“ For this purpose I take a preparation of orchil, obtained in the usual manner by treating orchilla lichen with ammonia: this preparation is dried and reduced to powder, and is then boiled or treated with naphtha; afterwards it is separated by filtration and dried. When this substance is employed in dyeing, oxalic or other acid and ammonia are used with it; or, in place of this process, the preparation of orchil is treated with alcohol, ether, or chloroform, which dissolves the colouring matter, and the dye bath is prepared from the extract thus obtained.”

[Printed, 4d. No Drawings.]

A.D. 1858, November 27.—No. 2698.

ALEXANDER, ROBERT.—“ Improvements in treating, preparing, and bleaching textile fabrics and other materials.”

The invention relates to the use of steam in treating, preparing, and bleaching woven goods, and other materials, whereby the processes are materially quickened, whilst the result is a very great improvement in the treated goods, particularly in the colours of printed or ornamented goods. Instead of boiling the goods, as is usually the practice, the fabrics are passed in an open sheet form slowly through steam chests, or through or in contact with steam in any convenient way. This steam treatment is employed instead of the usual boiling processes at all or any of the stages of preparation and bleaching where boiling is resorted to, and with or without the presence of the chemical ingredients employed in the processes.”

[Printed, 1s. 4d. Drawings.]

A.D. 1858, December 1.—No. 2741.

VASSEROT, CHARLES FRÉDÉRIC.—(*A communication from Adolphe Lequint.*)—(*Provisional protection only.*)—"An apparatus for printing with different colours thread to be applied to the manufacture of textile fabrics."

The threads of wool, silk, or cotton, to be coloured are rolled upon bobbins, and a certain number of them is placed upon a bobbin holder, from which the threads pass through a comb divided according to the number of threads to be coloured at the same time. Immediately behind the comb are fixed two rollers, which press upon the threads and conduct them between two cylinders, one of which, the printing cylinder, bears the design to be reproduced, and the other serves as printing table. This last-mentioned cylinder receives its motion by means of a pinion mounted upon the shaft of the main pulley of the machine, and communicates it to the printing cylinder, which in its turn transmits it to two rollers which feed the cylinders with colours. After leaving the cylinders the threads are conducted upon a reel, the motion of which is regulated according to the speed of the machine.

[Printed, 4d. No Drawings.]

A.D. 1858, December 3.—No. 2767.

COATES, CHARLES. — "Improvements in mandrills for printing."

The body of the mandril is conical at each end, and so made that it goes easily into the copper printing roller; over each of these conical ends a hoop of iron or steel is placed, the external diameter of which is turned to about the internal diameter of the copper roller, and its interior is made to fit the conical part of the mandril. The iron or steel hoop is also cut longitudinally in one or more places. When the mandril is put into a copper roller, the hoop is forced up the conical part of the mandril by means of nuts screwing on to the ends of the mandril, which expands the hoop, and causes it to press against the inside of the roller which is thus held securely. If the hoops be cut in more than one place, so as to form two or more wedges, a pin is passed through

each end of the mandril, and the ends of the pins work in recesses in the wedges; the wedges are also retained by a flexible hoop or spring which passes round them, and presses them against the mandril. By these means the wedges are prevented from turning round, and also from falling off the mandril.

[Printed, 10*d.* Drawings.]

A.D. 1858, December 6.—No. 2790.

MUIR, JAMES, and MUIR, FRANCIS.—(*Provisional protection only.*)—"Improvements in ornamental or colour printing."

This invention relates to a system of multi-colour printing, whereby very superior effects are obtainable with a comparatively few number of printing impressions. Supposing there are five colours in the design, the first two are printed by corresponding blocks in the usual way. The other three are put on from a single sieve or colour box, that is to say, from a sieve on which the three several colours to be printed are laid in stripes at predetermined positions. In this way, as the block is laid upon the sieve, it takes up the three colours on the predetermined portions of the figure, and when applied to the cloth or surface to be printed, it deposits its three several colours so as to form actual integral or detail portions of the pattern, encircling the pattern with a "rainbowing" effect. The different colours may be conveniently applied to the sieve or colour box by means of a cellular feeder, or rectangular chamber formed into a series of colour cells open at the top. The bottom of this cellular feeder is fitted with two parallel loose running rollers, to which the several colours find access through suitable conducting holes, so as to render the rollers instrumental in delivering the colours to the sieve or colour box. For "rainbowing," the rollers are themselves covered with sieve cloth, so that they are thus enabled to distribute the colours upon the sieve surface with a due "rainbowing" or blending effect. When not used for "rainbowing," the rollers are grooved or cut into annularly at each part which receives colour, and thus the colours are distributed evenly and sharply. "This system of multi-colour printing may be carried out without the use of single-colour

“ printing at all, the different colours being laid on by means
“ of one or more multi-colour blocks or surfaces.”

[Printed, 4d. No Drawings.]

A.D. 1858, December 10.—No. 2833.

LIGHTFOOT, JOHN.—“ Improvements in printing or staining
“ yarns, fabrics, or fibrous substances, and in the manufacture
“ of certain compounds for that purpose.”

The invention consists in “making an alkaline solution of
“ colouring matters and metallic oxides with which when
“ thickened in any convenient manner, I print fabrics or yarns,
“ or in any other manner stain or imbue them, putting the
“ said fabrics through a subsequent process for the purpose of
“ developing and fixing the colour.” The oxides of metals
“ available for the purposes of this invention are those which
have the property of combining with alkalies so as to form
soluble salts in which the oxide plays the part of the acid.
By mixing a salt of this class with a decoction of colouring
matter, a clear solution is obtained, and when yarn or fabric
is stained with this and passed into a weak solution of acid or
acid salt, or mixture of acid and a salt, the alkali is neutralized
and a lake is left on or in the fabric or yarn, the shade of which
depends on the colouring material used and the particular
metallic oxide which has been made use of.

[Printed, 4d. No Drawings.]

A.D. 1858, December 13.—No. 2851.

WHITTAM, ROBERT.—“ Improvements in machinery or appa-
“ ratus for tracing designs from an engraved roller, or from
“ an engraver’s sketch, upon steel or other metallic surfaces
“ used as dies by engravers to calico printers.”

The invention consists in working two motions together, one
in the direction of the length, the other in that of the circum-
ference of the engraved roller or engraver’s sketch. The roller
or sketch being placed upon a suitable mandril or other
support, from which the design is to be traced, sliding carriages
are placed on a cranked rail, each crank being connected to
the carriage by a band, rod, &c. One of these cranks is placed
on two centres lineable with the centre of the engraved roller,
the other, with the sliding carriage and tracer upon it, being
suspended over the engraved roller, which is adjusted at one

end of the crank. A large toothed wheel is fixed on the aforesaid two centres, and a weight applied under the crank to counterbalance the rail, carriage, and tracer, which are suspended over the roller or sketch. The metallic surfaces used as dies are placed in two centres, one revolving and the other stationary, in front of the crank and carriages, which are supported on the two centres. A toothed wheel or pulley is then placed on the revolving centres and geared to the large wheel or pulley. A rail is then placed between the intended die and the aforesaid crank and its carriage in the two centres, which supports the tracer as it traces the design upon the die, the said rail running on friction bowls. The ordinary foot treadle is used to support the tracers when not in action on the dies.

[Printed, 10d. Drawing.]

A.D. 1858, December 15.—No. 2867.

PENDLEBURY, JOHN.—“Improvements in machinery or “apparatus for bleaching or cleansing textile fabrics or materials.”

The invention consists in an arrangement of vessels and apparatus for the purpose of bleaching or cleansing manufactured or piece goods or yarns of cotton, linen, or other fibrous material by the novel application and employment of high pressure steam for first boiling the bleaching liquid (or heating it to any required temperature above 212°) in a separate closed vessel, and then forcing such liquid so heated through the goods or fabrics to be bleached, the goods being contained in a closed vessel or “kier” conveniently situated near to the heating or boiling vessel. The liquid, after being thus forced in a heated or boiling state through the goods, is returned to the boiling vessel, where it is again heated to the required temperature and again forced through the goods, such operation or process being continuously repeated until the goods are sufficiently bleached.

[Printed, 6d. Drawing.]

A.D. 1858, December 18.—No. 2904.

WEBER, EMILE.—“Improvements in dyeing or colouring “textile fabrics and materials, and in the machinery or “apparatus connected therewith.”

The invention is an improvement on John Henry Johnson's Patent, No. 1903, A.D. 1853, the principle of which is unaltered. The vessel containing the materials to be dyed is broader and shorter (not exceeding two feet), by which means the layer or column of material contained between the disc and false bottom, through which the dye liquid is to be forced, is greatly reduced, and consequently a more uniform tint is obtained with a considerable reduction in the power required to work the pumps. Where an inequality of tint arises from the thickness of the layer, the materials are reversed, so as to bring the top of the layer downwards and the bottom of it upwards. For this purpose the top and bottom perforated plates are connected by bolts or otherwise, and lifted out bodily with the materials between them. The whole is then reversed, and the materials and discs deposited again in the dye vessel. In order that a constant stream of dye liquid may be kept flowing through the materials, an air vessel is placed on the pipe which supplies the dye liquid to the dye vessel.

[Printed, 10d. Drawing.]

A.D. 1858, December 24.—No. 2942.

CHILD, JOHN WRIGHT.—“Improvements in dyeing wool and other fibres.”

The invention consists in “dyeing wool and other fibres when formed into a connected sliver by combing, carding, or other straightening means, or in any of the states of preparation therefrom, to and including the roving previous to spinning, by conducting or drawing such fibre in a continuous line and in a distended state through the dye liquid, and thence to suitable washing and drying means, from which it is formed into balls or other forms desired, in place of dyeing such fibres in hanks or coils, as is the usual practice.”

[Printed, 6d. Drawing.]

A.D. 1858, December 29.—No. 2976.

KAY, RICHARD DUGDALE.—“An improved chemical means of applying or fixing on woven or felted fabrics certain colour-matters produced from tar.”

“Some of the colouring matters which I employ have been called harmuline, indisine, and fuchsine, although some of these names have been heretofore applied to colouring matters derived from other substances. My method of fixing or applying the said colouring matters upon the fabric consists in the employment of them in solution in combination with albumen (prepared from eggs or blood), caseine, protein, lactarine, or any other substance having similar properties, and capable of forming albuminates, caseinates, &c.; and as these colouring matters are not all soluble in water, I dissolve them in oils or oils and alkalis, or tartaric or other vegetable acids, or a mixture of two or more of these substances. When the colouring matters are thus dissolved and mixed with the albuminous substances, I apply them to the fabric by means of blocks, rollers, or other printing surfaces, and I subject the fabric so printed (after drying) to the action of steam, or” “the fabric may be passed through hot water alone, or through water hot or cold, containing an acid or a salt, or it may be otherwise subjected to a dry or moist heat, and when so steamed or heated may be passed directly through ammoniacal water or vapour, which will better develop the colour and preserve the white.”

[Printed, 4d. No Drawings.]

1859.

A.D. 1859, January 5.—No. 38.

DRAPER, WILLIAM. — “Improvements in machinery for printing on paper and other fabrics.”

Heretofore it has been proposed to connect together two frames carrying printing blocks, and to move them to and fro across the paper, so that they may alternately be brought over and be pressed down on the paper or other fabric. Each set of blocks as it left the paper was passed over a colouring roller placed on each side of the paper. “One part of the present invention consists in combining two such apparatus, so that

“ two lengths of paper,” “ may be printed at the same time.
“ For this purpose four block plates, each carrying one or
“ more printing blocks are made to slide up and down be-
“ tween guides in four frames connected by means of set
“ screws to a bar at right angles to the two pieces of paper ”
“ to be printed, and in the centre of this bar, or its upper and
“ under sides, toothed racks and toothed segments, are caused
“ by means of toothed wheels or their axes taking into gear
“ with a toothed wheel on the driving axis alternately to come
“ into gear with the rack on the top and with the rack on the
“ bottom of the bar, so that the bar is caused to move to and
“ fro, and when the bar has been moved to the furthest point
“ each way, one set of blocks is over each piece of paper or
“ other fabric to be printed. The block plates carrying the
“ printing blocks are each supported in their frames by means
“ of springs, so that the blocks do not touch the surface of
“ the paper,” “ until they are pressed down upon it. This is
“ effected by the block plates when over the pieces of paper,”
“ being under the end of an arm which is depressed by its
“ being connected to the end of one arm of a lever, a pin on
“ the other arm of each of the levers passing through a slot
“ in a rod to which a to-and-fro motion is communicated by
“ means of a crank on the driving axis, by which means both
“ levers are worked by the same crank.”

The next part describes an “ apparatus for moving the paper
“ or other fabric forwards after each impression. It consists
“ of a slide with clips to clip the sides of the paper;” “ this
“ slide is moved to and from stops which are capable of
“ adjustment; the slide is first moved up to the first set of
“ stops, and the clips caused to clip the sides of the paper,”
“ the slide is then moved back to the other stops so as to
“ draw forward the paper,” “ the clips are then released, and
“ the slide moved back to the first set of stops. In this
“ manner the paper, &c., is moved a distance after each im-
“ pression from the printing blocks.”

Another part of the invention consists in an improved
method of applying colour to colouring rollers, and consists in
employing for this purpose sections of cylinders movable on a
spindle, “ so that they can be arranged to supply colour to the
“ colouring roller at the required places where any particular

“ colour is wanted, each of these sections of cylinders turning
 “ in a separate colour pan, by which means I am enabled to
 “ work with two or more colours from one block.”

[Printed, 1s. 4d. Drawings.]

A.D. 1859, January 5.—No. 40.

RUMNEY, ROBERT, and MACDONALD, WILLIAM STEVENSON.
 —“Improvements in printing and dyeing woven fabrics and
 “ yarns or threads.”

The invention relates to dyeing with colour deprived from uric acid, “murexide” for instance; it is also applicable in part to other colouring matters, such as those in which catechu, Brazil, wood, chrome, or logwood are used. “The method we adopt is to form a multiple mordant upon the material, obtained by combining thereon metals or earths dissolved in acids with metals or earths dissolved in alkalis. After the goods are scoured or bleached they are immersed in an acid solution as aforesaid, such as acetate or nitrate of lead, tin, copper, zinc, or acetate, nitrate, muriate, or sulphate of alumina, or alum, or other earth. After this they are treated with a solution of the oxides of any of these metals or earths in caustic alkali, say, for example, plumbate or stannate or silicate of potash or soda, aluminate of potash or soda, ammoniate of copper, &c.” “Another base or mordant which we employ for colours derived from uric acid and for other colours is the acetate of potash, or soda, or ammonia, either simply or in combination with arsenic or arsenious acid. In preparing the colour bath for dyeing with colours derived from uric acid as aforesaid, we dissolve the murexide with nitrate of lead in water as usual. The goods are then immersed in this fluid, and subsequently passed through a bath of acetate or subacetate of lead.”

[Printed, 4d. No Drawings.]

A.D. 1859, January 20.—No. 182.

SAGAR, HENRY, and SCHULTZ, ALEXANDER.—“Improve-
 “ ments in producing pink shades on cotton fabrics or
 “ yarns.”

The cotton pieces or yarns (previously bleached) are padded in a solution made by dissolving murexide in a solution of

nitrate of lead, and adding a solution of bi-chloride of mercury. If a light shade of pink be required, the mixture is diluted with water. "The pieces or yarns when treated in this manner become dyed of a brownish red tint, and the object of our invention is to change this tint, which has heretofore been produced when dyeing with murexide, into a pink colour. This we do by the use of alkalies, alkaline salts, acids, acid salts, and acetate of soda, mixed with wheaten starch, flour, farina, gums, gum substitutes, or other thickening materials for stiffening fabrics and yarns;" the thickening material is employed to prevent the colour from fading, more especially if the fabrics are passed over heated rollers. "The fabric or yarn when dyed with murexide, as above mentioned, is passed through the thickening material in the manner usually practised in dressing fabrics and yarns."

[Printed, 4d. No Drawings.]

A.D. 1859, February 5.—No. 332.

GREENHALGH, NATHANIEL, SHAW, WILLIAM, and MALLISON, JAMES, junior. — "Improvements in the treatment and preparation of yarns or threads previously to dyeing."

The invention relates to the treatment of yarns in the "cop," and consists in so preparing the cops of yarn previously to dyeing as to enable such cops to take the same dye as the woollen, &c., material, with which the cotton may be woven. The cops are placed in a suitable chamber in connection with an exhausting apparatus, and when the yarn is thus in vacuo a solution of shumac or catechu, or any other equivalent containing tannin, is introduced, and the yarn thoroughly saturated. It is then submitted to the action of "hydro-extractors" to dry out the superfluous moisture, and afterwards placed in vacuo again, and (if to be dyed black) saturated with a solution of iron (say nitrate or sulphate); it is then dried, and is in a condition to be woven into cloth with a woollen or worsted substance, or alpaca, hair, or other similar fibre, and "both will be found to take the same dye," "and present the appearance of cloth made or woven with the cotton yarn previously dyed, thereby dispensing with the necessity of

"dyeing the cotton yarn separately, and previously to weaving, as hitherto done."

[Printed, *8d.* Drawing.]

A.D. 1859, February 5.—No. 335.

SYKES, THOMAS, and SYKES, BENJAMIN CLIFFORD.—"Obtaining or separating oily, fatty, greasy, tarry, waxy, and resinous substances from oleaginous seeds, nuts, and fruits, wool, silk, hair, cotton, flax, line, hemp, furs, skins, leather, bones, fish, and other animal matters and refuse, woollen and cotton waste and refuse, and textile fabrics, refuse grease produced in many branches of industry, indigo lac, lac dye, and other dyes by means of bisulphide of carbon and hydrostatic pressure, also from the above-named matters except silk, hair, wool, and textile fabric, by means of naphtha and hydrostatic pressure."

First, "the use of bisulphide of carbon" for the above purposes. Second, "the use of hydrostatic pressure with water or other fluid to facilitate the percolation of the solution of the oily," &c. "substances in the bisulphide of carbon or naphtha through the bodies or substances treated, and ultimately to displace it."

A vessel is provided with "a false bottom perforated with holes, and in some cases a false top, also perforated." The substances to be treated are put on this false bottom and covered with "naphtha or bisulphide of carbon, as the case may be," the top is fastened down by screws, &c., and there are pipes at the top and at the bottom by either of which the hydrostatic pressure is applied.

[Printed, *4d.* No Drawings.]

A.D. 1859, February 9.—No. 365.

CROSSLEY, JOSEPH.—"Improvements in the means employed when steaming printed yarns."

The invention consists:—1st. Of means for obviating a difficulty experienced in the working of No. 1952, A.D. 1856, owing to the quantity of cold air which passed into the steam box when it was open for the removal of the yarn, condensing the steam, and staining the yarns below by the droppings from the zinc. For this purpose, the plates are so formed as

to admit of the introduction of steam, and so prevent the possibility of condensed steam gathering underneath the plates. 2nd. In the employment, when steaming printed yarn, of troughs placed underneath the cradles or other supports to the yarns, such troughs containing water heated to a great degree. The steam arising from the hot water passes at once through the yarns placed immediately above it, thus fixing the colours of the yarn. The steam thus passes away through the top of the chamber, carrying away with it the impure gases arising from the colouring matter. 3rd. Constructing the whole or part of the outer framework of the cradle frames or other supports of the yarns of cast or wrought iron instead of wood.

[Printed, 4d. No Drawings.]

A.D. 1859, February 12.—No. 403.

BOUSFIELD, GEORGE TOMLINSON. — (*A communication from André Burdel and Chicard.*)—(*Provisional protection only.*)—

“Improvements in revivifying the scarlet colour of woollen cloth, lace, and embroidery in use for military and other garments and furniture.”

The following is the composition used:—Citric acid 300 grains, carbonate of potash 150 grains, water 7500 grains: the citric acid is dissolved separately in 4500 grains of water, and the carbonate of potash in 3000 grains of water, each of these substances being first pounded in a mortar to facilitate the solution. The solutions are then mixed. The composition may remain white or be coloured with carmine or other substance. It is thus applied:—The article of wool is brushed, when dry, and the part to be revived rubbed with a brush dipped in the composition, and allowed to soak during ten to fifteen minutes. It is then cleaned again with a brush moistened with the same composition, until the wool becomes a deep red, when it is dried. The wool is then wiped over with cold water, the fabric rubbed with a brush, and allowed to dry.

Instead of citric acid, oxalic acid, tartaric acid, cream of tartar, nitric acid, sulphuric acid, and salt of sorrel, may be employed.

[Printed, 4d. No Drawings.]

A.D. 1859, February 16.—No. 440.

EASON, JOHN.—“Improvements in apparatus applicable to “tanning, dyeing, and obtaining extracts from vegetable, “animal, and mineral substances.”

The invention consists:—1st, of machinery for tanning, by hydrostatic pressure. The tanks used are square, oval, or cylindrical, capable of bearing a pressure of from 100 to 1000 lbs. per square inch, and fitted with air-tight covers. They are lined with marine glue, gutta percha, lead, copper, or wood. The interior of these tanks are fitted with frames or sashes which run in grooves on each side of the tank. These frames have the skins, &c., stretched and laced over them or merely hung over as required. When the latter are in their places, the lid is secured, and the tanning liquor forced in by hydraulic pressure.

For colouring the hides, &c., by atmospheric influence, the frames are lifted out by chains attached to the corners of them.

“For the purpose of obtaining extracts from various substances, I place a perforated metallic plate about one-third “distance from the bottom of the tank, on which is laid a “layer of sponge or other suitable filtering material, above “which is another perforated plate, and upon this the substance to be operated on is laid in a pulverized state. Hot “and cold liquor is then forced into the upper part by “hydraulic pressure, while at the same time an air pump “exhausts the air in the lower chamber, into which the “extracts pass.”

[Printed, *sd.* Drawings.]

A.D. 1859, February 18.—No. 453.

WALLIS, GEORGE.—(*Provisional protection only.*)—A “method “of engraving, applicable to the production of printing “surfaces, and the ornamentation of metallic and other surfaces.”

A drawing is made or a print taken on paper from an engraved surface, with ink containing gum arabic, or other adhesive substance. Emery powder, sand, or other hard material in powder is applied to the adhesive ink, and causes the lines of the drawing or print to stand out in relief. The

paper is placed between two metal plates, by preference the one at the back is made of hard metal, the other of soft; both plates, with the paper between, are passed between rollers, and the drawing or print is impressed upon the surface of the soft metal, and from the impression so made copies may be printed off.

If a soft metal roller be required to be engraved for printing fabrics, the drawing is passed between it and a hard roller.

[Printed, 4d. No Drawings.]

A.D. 1859, February 22.—No. 486.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from M. Verguin.*)—"A method of fixing tannin upon textile fibres " and the employment thereof in dyeing black and dark " colours."

The tannin is made to unite itself with a reducing agent, forming with it a composition insoluble in water and not readily soluble in acid, but capable of absorbing oxygen from the air. Stannic salts, especially chlorides of tin, are the best suited for this purpose.

In applying this mode of fixing the tannin in dyeing fibres of black and dark colours, the fibres are first dyed blue with a persalt of iron and with prussiate of potash, care being taken that the persulphate, when such is used, marks at least 25° Beaumé. The fibres are passed a second time through the persulphate of iron. After this they are submitted to the operation described for fixing the tannin; the blacks are then completed as usual by dyeing them with India wood (*bois d'Inde*), washing with soap, and applying the finishing process (*avivage*). For marones and browns the tannin is fixed without previous dyeing, and the colour is modified as desired with blues or reds.

[Printed, 4d. No Drawings.]

A.D. 1859, February 24.—No. 505.

WAGNER, JEAN HENRI GUILLAUME DANIEL.—"Apparatus for " cleaning water, and removing all matters in suspension " and dissolution contained in it, water intended to feed gene- " rators of all sorts, (applicable also to other purposes), which

“ besides, previous to its getting into the generators, is heated “ to the highest degree without almost any expense.”

1st. The principles on which the apparatus forming the first part of the invention is based, are, (a) the subdivision of the water to be purified into thin continuous sheets or fibres of indefinite length, in which it is heated; (b) double traverse of the liquid film upon two surfaces peculiarly arranged, on which all incrustations are deposited and kept adherent; (c), the heating of the liquid film by direct contact with steam or steam heated surfaces; (d), the condensation of the escaping or waste steam during its continuous flow.

2nd. The application of the above apparatus to “arts and “ industry,” to all steam generators, working engines, and to other purposes, to the generation of steam or the production of hot water, to obtaining chemical products, to sugar baking, brewing, distilling, to syrup and liquor trades, baths, to washing, tanning, dyeing, torrifying, &c.

The rest of the Specification contains matter foreign to the present series.

[Printed, 2s. Drawings.]

A.D. 1859, March 5.—No. 585.

VERDEIL, FRANÇOIS, and MICHEL, EDMOND.—“Improvements in treating madder.”

The invention consists in treating madder with an alkaline liquid, in exposing it when in contact with the alkaline liquid to the action of the air to oxidize it, and in afterwards boiling the madder, thus prepared, in acid. The liquid is an aqueous solution of soda, potash, or ammonia, or of a base such as lime or of an alkaline salt such as carbonate of soda. The substance wetted by the alkaline liquid is stirred from time to time in order to increase its contact with the atmosphere as much as possible, and the mass thus caused to become oxidized by absorbing the oxygen of the air. At the end of from twelve to twenty-four hours, the mass is treated with sulphuric acid at the temperature of ebullition.

[Printed, 4d. No Drawings.]

A.D. 1859, March 7.—No. 590.

PROUDFOOT, DUNCAN.—(*Provisional protection only.*)—“Improvements in Turkey red dyeing.”

The invention relates to the application and use of the fruit or produce of the velani tree or Turkish oak in the preparing and dyeing of cotton cloth or yarns according to the Turkey red process. "The new article is employed in all cases where galls or sumachs are used with alum and other salts of alumina, and the result is that it makes the colour more fast than at present, whilst it effects very great economy in the cost of the process.

"Although the new application is especially intended for use in Turkey red dyeing, it is also available in the production of other colours."

[Printed, 4d. No Drawings.]

A.D. 1859, March 14.—No. 643.

LIGHTFOOT, THOMAS.—"Improvements in fixing colours on woven fabrics or fibrous materials."

For this purpose, cotton fabrics which have been mordanted with salts of alumina or other earthy or metallic salts, or mixtures of salts of alumina or other salts, and subsequently dyed with madder or a preparation of madder or other colouring matters, with a view to cleaning afterwards with soap liquor, commonly called "soaping," are exposed to the action of low-pressure steam, the steaming process taking place between the dyeing and the soaping, by which it is found that "the dyed portions have become more capable of resisting the dissolving action of the soap, and retaining at the same time the property of being purified or brightened thereby, whilst the unmordanted portions are being by the same process cleared or bleached."

[Printed, 4d. No Drawings.]

A.D. 1859, March 21.—No. 710.

WHITTAKER, ROBERT.—(*Provisional protection only*).—"Improvements in the manufacture and construction of metallic rollers or cylinders and mandrils for printing."

The invention relates for the most part to such rollers or cylinders as are used for printing textile fabrics, and consists in so arranging the rollers as to make them capable of steadily withstanding the severe lateral strain of the printing action, whilst a small quantity of copper is used in them. The mandril

or central action on which the actual printing cylinder is carried is of wrought iron, in two lengths, capable of connection by a screwed junction. "The external end of each piece " is formed with a conical shoulder piece, the larger end of " each cone being disposed outwards. The central portion of " the mandril has fitted upon it a short cast iron cylinder turned " inside and out, and grooved externally to receive a fixed " feather in the interior of the actual copper printing cylinder " which is fitted on over it." "At the driving end of the " mandril a key or feather is employed to connect the mandril " with the interposed wrought iron cylinder, and the latter is " similarly connected by a feather with the copper printing " cylinder. In this way the actual printing cylinder, which " may be made of very thin copper, is supported upon three " interposed cylinders or tubular pieces of metal, and the " setting up of the whole into a solid working cylinder is " effected by the screwing together of the two sections of the " mandril, the cones upon which corresponding to internal " cones in the outer ends of the two interposed end cylinders, " produce the necessary jamming or supporting set up for " work."

[Printed, 4d. No Drawings.]

A.D. 1859, March 26.—No. 770.

SMITH, BENJAMIN, and SMITH, CHARLES LAVERS.—"Im-
"provements in the preparation of certain colouring matter,
"applicable for dyeing and printing."

The invention relates to a method of preparing orchil, and consists in reducing to a concentrated or solid form ammoniacal solutions of orchil, obtained in the ordinary way. "We "take orchil liquor, or extract of archil of commerce, or the "colouring matter of archil held in solution by ammonia; to "this liquid colouring matter we add any chemical ingredient "which, by reason of its affinity for the ammonia or other "agent which has been employed in extracting the colouring "matter from the lichens, will decompose the liquid, and "throw down the colouring matter therefrom." "When the "precipitate has settled down, it may be filtered and collected "in the form of a paste, which must be washed to remove any "salts it may contain; then if desired it may be dried and

“ pulverized.” “ When the solution of archil or archil liquor
“ to be operated upon ” “ is found to contain an inconvenient
“ quantity or proportion of gummy, fibrous, or mucilaginous
“ matter, we find it advisable to heat the precipitate with a
“ slight excess of acid, when it may be filtered, washed, dried,
“ and pulverized as above mentioned.”

[Printed, 4d. No Drawings.]

A.D. 1859, March 26.—No. 771.

BUCKLEY, JOSEPH, GREENHALGH, ORLANDO, and HUTCHINSON, ROBERT.—“ Improvements in machinery or
“ apparatus for printing woven fabrics.”

The invention relates to a machine capable of producing the pattern with accuracy on both sides of the fabric. Two cylinders are placed horizontally. The cloth to be printed passing over one of them, is printed on one side, after which it proceeds to the other cylinder, where it is printed on the other side. Between each of these cylinders and the “ white cloth,” or blanket, a sheet of grey cloth is made to pass, so that the white cloth, after leaving the first cylinder is received by the grey cloth, and conducted with accuracy to the printing rollers for the second printing.

[Printed, 10d. Drawings.]

A.D. 1859, April 1.—No. 817.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Messrs. Depouilly Frères.*)—(*Provisional protection only.*)—“ A
“ new preparation of indigo for dyeing.”

The preparation is as follows :—The indigo, reduced to fine powder, is mixed with three times its weight of slacked lime, also in a state of powder and previously subjected to the action of sulphurous acid. These substances are thoroughly mixed, and have added to them sufficient water to form a semi-liquid paste, in which state they are heated, and maintained for about two hours at from 140° to 160° Fahrenheit, being constantly stirred, and water being added to take the place of that passed off by evaporation. The new preparation may be preserved in a state of paste, and formed into cakes or into powder.

[Printed, 4d. No Drawings.]

A.D. 1859, April 4.—No. 835.

POTTS, FERDINAND, and BROUGH, ROBERT.—(*Provisional protection only.*)—"Improvements in the manufacture of calico printing rollers or cylinders, also in the machinery or apparatus for performing certain parts of the same, and which said apparatus are also applicable, separately or conjointly, to the manufacture of parallel and other metallic tubes, and the rolling of the metal for the same or other purposes."

The invention consists in forming a taper tube of sheet iron or other metal of any convenient thickness, upon a perfectly true mandril of the right degree or amount of taper. "While yet on the mandril, or filled with sand, we lay it in a pair of moulds, and cast on to it a coating of cast iron of sufficient thickness, which we turn down on the ends and face, taking care to preserve the concentricity of the inner tube or now taper hole. We next form a billet or seamless tube of copper, which we draw out to the proper thickness and size, so that it may be placed on the cast-iron cylinder," "and by passing them in this condition between rolls, or by pulling or forcing them through holes in the manner in which tubes are formed, the copper case will become firmly fixed on the iron cylinder, and has only to be turned and finished off to be fit for use." The invention further consists in the application of hydraulic power by "forming a suitable cylinder or cylinders connected with the frame or carriage in which rollers are set up for the rolling of metals, and which cylinders are so arranged that, by means of plungers connected with the bearings, or in or on which the rollers work, by forcing in or allowing water to escape from such cylinders or chambers, the rollers will be set more apart or closer together as desired, or according to the nature of the metal that is being rolled."

[Printed, 4d. No Drawings.]

A.D. 1859, April 8.—No. 880.

GRUMEL, NICOLAS ALEXIS. — "Improvements in dyeing cotton, wool, silk, flax, and other fibrous materials or fabrics."

The invention relates to means of obtaining a fast black dye and the shades thereof, without the use of indigo. The invention is described as in operation upon 5 kilogrammes, 11 lbs., of cotton. A tepid bath is formed by dissolving 1 lb. of extract of dry campeachy in 17 pints of water, and a solution made of $2\frac{1}{2}$ lbs. of dry campeachy and 17 pints of water. Cotton of the weight of $2\frac{1}{2}$ lbs. is then plunged into the bath, and subsequently wrung out and dried by exposure to the air. This process is repeated four times, the original bath being each time strengthened with a quarter of the solution. The mordant is prepared by dissolving $\frac{3}{4}$ lb. of bichromate of potash and $\frac{1}{4}$ lb. of crystallized soda in $3\frac{1}{2}$ pints of water. Into this bath a fifth part of the cotton, well dried as above, is plunged, and subsequently pressed and dried. A solution is also made of $1\frac{1}{10}$ lb. of bichromate of potash and $\frac{3}{4}$ lb. of crystallized soda in 17 pints of water. One quarter of the solution is then poured into the mordant bath, from which the first quantity of cotton has been withdrawn, and the process repeated as before. "When the cotton is withdrawn it is treated in the "ordinary manner."

[Printed, 4d. No Drawings.]

A.D. 1859, April 12.—No. 921.

BROOMAN, RICHARD ARCHIBALD. — (*A communication from MM. Renard Frères.*)—"Improvements in the preparation of "red dyes."

"Fuchsiacine," so called from the resemblance of the colour to that of the fuchsia. A mixture of aniline and anhydrous bichloride of tin is boiled for fifteen or twenty minutes, and then left to stand until it becomes jelly-like. In order to free it from impurities the mass is boiled in water and filtered, after which, on cooling, the colouring matter is precipitated. The colouring matter being insoluble in certain saline solutions, is completely separated by adding to the liquor one of the following salts in a solid state: tartrates, acetates, alkaline or earthy chlorides, alkaline phosphates, and pyro-phosphates, or chloride of mercury. The salt dissolves in the liquor, the colouring matter is precipitated, and afterwards gathered by filtration or decantation. "To dye, I use either the red solution resulting from boiling the mixture in water, or I use

“ the solid colouring matter obtained as above described, and
 “ dissolve it in water. Ordinary saline or acid mordants,
 “ with the exception of mineral acids, may be employed with
 “ it. To print with the colour, the filtered liquor solution
 “ would not be sufficiently concentrated; I therefore treat
 “ the mixture of aniline and bichloride of tin while hot with
 “ acetic acid, alcohol, or wood spirit, and precipitate the
 “ colouring matter as herein-before described.”

[Printed, 4d. No Drawings.]

A.D. 1859, April 12.—No. 922.

TATTON, SAMUEL.—“ Improvements in preparing and treating silk, and improvements in dyeing silk.”

The invention consists:—1st, in preparing raw silk, silk thread, sewing silk, and silk twist, commonly called Barber’s sewings or boot twist, before or after being dyed any colour except black, and whether manufactured into thread or twist or not, by submitting the silk to a bath of sugar or of sugar and gum, or to a bath of any other suitable glutinous substance; or instead of the bath of sugar and gum, &c., the silk is treated to a bath containing Aleppo galls, shumac, or other substances containing tan or tanning matter; 2nd, in dyeing the same raw silk, &c., yellow and gold colours and all shades thereof, by submitting the same to the following baths:—First, to a bath containing anatto and soap; second, to a bath containing muriate of tin or other solutions of tin or salts of tin; and third, to a bath containing Persian or Turkey berries. “ I sometimes substitute for the muriate of tin bath a bath containing nitric acid or nitro-muriatic acid, and then wash the silk in a solution of soda or other alkali.”

[Printed, 4d. No Drawings.]

A.D. 1859, April 16.—No. 957.

NEWTON, WILLIAM EDWARD.—(*A communication from Mr. Le Chatelier.*)—“ Improvements in the manufacture of alumina.”

Preparing alumina which “ may be applied to various useful purposes in the arts” named, among which are “ the printing and dyeing of fabrics,” as follows:—An aluminate of soda or potash is first formed and the alumina may be precipitated from a solution of the same. “ 1st, by the action of

“ carbonic acid gas.” 2nd, with a solution of bicarbonate of soda. 3rd, with a solution of carbonate or bicarbonate of ammonia. “ 4th, by the formation of an aluminate supersaturated with alumina, and the spontaneous separation of a portion of the alumina by settling.” “ 5th, by employing an acid in quantity equivalent to the soda of the aluminate and more especially muriatic (hydrochloric) acid, as this aluminate may be employed for the condensation of the last vapors of muriatic acid in the manufacture of that acid.” “ 6th, by the treatment of the alkaline carbonate in solution by a solution of hydrochlorate of ammonia or of chloride of calcium, &c.” 7th, by means of chloride of aluminium. If the alumina contains a small quantity of iron, the alumina may be calcined and “ again taken up by an alkali and again precipitated from the aluminate after filtration.” “ In any case the employment of water charged with ferruginous salts and organic matters should be avoided as much as possible.” The alumina precipitated by carbonic acid contains carbonate of soda which if necessary may be separated by the addition of a small excess of muriatic or nitric acid with heat, or by digestion with excess of chloride of aluminium.

[Printed, 6d. No Drawings.]

A.D. 1859, April 25.—No. 1030.

HIGGIN, JAMES.—“ Improvements in treating madder and plants of the same family, and preparations therefrom.”

The invention consists:—1st, in causing the madder, &c., to remain in contact with the acid (generally sulphuric or muriatic) for a much longer period than usual at the ordinary temperature of the air previous to washing; 2nd, in drying a mixture of madder, or a proportion of it and acid, and subsequently washing out the acid; 3rd, in the use of corrosive metallic salts, partly in place of acids; 4th, in the manufacture of an extract of madder from the rubian or xanthine contained therein. A crude solution of rubian, &c., made by mixing these materials with water and adding madder, is mixed with an alkali or alkaline salt, and a current of air turned on it for several hours, the liquor being still kept warm. A salt of an alkaline earth is then added “ when a red precipitate falls; or to the rubian liquor is added a mixture of

“ ammonia and muriate of lime, and air blown in as before;
 “ and when no more red precipitate falls the process may be
 “ stopped, or lime may be added at once to the rubian liquor
 “ and oxidation produced as before. In any case the red pre-
 “ cipitate is filtered out and mixed with a small quantity of
 “ water, and sufficient muriatic or sulphuric acid added to
 “ make it very sour. It is then boiled for about an hour,”
 “ cooled, filtered, and the resulting extract washed till
 “ neutral. It is then a very concentrated extract of madder,
 “ and may be used in the wet state for dyeing or printing, or
 “ may be dried and ground.”

[Printed, 4d. No Drawings.]

A.D. 1859, April 30.—No. 1090.

WILLIAMS, CHARLES HANSON GREVILLE.—“Improvements
 “ in the manufacture of colouring matters, and in applying
 “ the same for dyeing and printing fabrics and materials.”

“ By the destructive distillation of quinine, cinchonine, and
 “ strychnine or brucine, a series of liquid basic substances
 “ are obtained, and it is from such basic substances that,
 “ according to the present invention, colouring matters
 “ suitable for dyeing and printing fabrics and materials are
 “ manufactured.” The substances named are mixed with
 caustic alkali or alkaline earth, such as potash, soda, or lime
 the latter being in considerable excess. The mixture is dis-
 tilled, and an oily liquid obtained. This liquid is redistilled,
 and in this operation the bodies which pass over at a tem-
 perature of less than 350° are separated from those that require
 a higher temperature for their volatilization. Both portions
 of the distillate matter yield colouring matter. The portion
 of which the boiling point is high is treated with the iodide,
 sulphate, or other suitable compound of amyl or other alcohol
 radical. Water and ammonia in excess is then added, and the
 whole boiled, until the oil-like liquid assumes a deep blue,
 lilac, or purple colour. The colours thus obtained are by
 preference used in an alkaline condition when dyeing, and as
 the colours are not readily soluble in water, alcohol is used to
 keep them in solution. The portion of the distillate having
 the lower boiling point is mixed with amyl or other radical
 compound as before, and the mixture heated in a close vessel
 to 250° . Water is then added, and an oxidizing agent, such

as the red oxide of mercury, or other metallic oxide which is capable of yielding oxygen to the basic compounds, and the whole is then boiled till the colour ceases to increase in purity and intensity. The liquid passes through a series of colours until it becomes blue, lilac, or purple, when the process is complete.

[Printed, 4d. No Drawings.]

A.D. 1859, May 2.—No. 1103.

EMERSON, FREDERICK WILLIAM.—“Improvements in treating
“ores, to obtain a new metallic substance and its salts, and
“in the application of such matters, and also certain products
“of tungsten, in dyeing, printing, and painting.”

The invention consists:—1st, in the separation of a new metallic substance called chrolithineum from the ores of tungsten, such as wolfram, tungstate of lime, tungstic oxide, and others, and the manufacture and application of its various salts to useful purposes in the arts, such as dyeing textile fabrics, painting on porcelain, and the production of paints and pigments; 2nd, in the manufacture and application of the so-called blue oxide of tungsten as a dyeing substance for textile fabrics and as a paint or pigment; 3rd, in the production of paratungstate of alkali, metatungstate of alkali, isotungstate of alkali, and polytungstate of alkali, which may be used in the preparation of paints and pigments, and for dyeing textile fabrics, and other useful purposes, and the combination of paratungstic, metatungstic, isotungstic, and polytungstic acids with any suitable metallic oxide or mixtures of metallic oxides as a base, such as the oxides of lead, zinc, barytes, lime, and others, to form paints and pigments.

[Printed, 6d. No Drawings.]

A.D. 1859, May 7.—No. 1155.

KAY, RICHARD DUGDALE. — (*A communication from Dollfus, Mieg, and Cie.*)—“Improvements in the preparation of certain
“colouring matters.”

The invention consists in producing colouring matter from aniline or other similar products obtained from coal or other bituminous substances. The aniline, &c., is mixed with an acid so as to form a salt, the base of which is the aniline, &c.

This compound is mixed with a quantity of peroxide of manganese rather more than sufficient to combine with the acid contained in the compound, and the mixture heated and stirred until it ceases to produce a precipitate. The colouring matter is separated from the precipitate by filtration. The precipitate is also digested in dilute sulphuric acid, so as to dissolve any colouring matter which it may contain, and this solution is then filtered. These solutions being added together, ammonia or other alkali is mixed with them in sufficient quantity to combine with and neutralize all the acid they contain, by which the colouring matter is thrown down together with manganese. The precipitate is separated by filtration, after which it is washed and dried, and when dry digested in alcoholic spirit to dissolve and separate the colouring matter from the other matters of the precipitate. The colouring matter thus obtained is called "Harmaline."

[Printed, 4d. No Drawings.]

A.D. 1859, May 9.—No. 1157.

RAMSBOTTOM, JOHN.—"Improvements in machinery for "printing fabrics."

The invention consists :—

1st. In causing the fabric to pass over a frame to which a lateral motion is given by an eccentric or other suitable mechanism, and thus producing a variety of patterns known as wavy, eccentric, and rainbow styles. In producing wavy patterns one cylinder engraved with parallel circular lines is employed, and a variety of patterns produced by varying the amount and speed of the traverse imparted to the fabric. In producing eccentric and rainbow patterns the fabric is first printed with parallel lines and then with wavy lines, or *vice versé*, or the pattern may be produced by combining wavy lines of the same or different designs. "The patterns " produced can be varied to any extent by printing the fabrics " of the same or different colours in lines, dots, or other " designs, and then passing them through a machine to " which the traversing motion is imparted."

2nd. In improved modes of making the stretching bars over which the fabrics pass. These bars are made with circular projections and recesses, or a right-and-left-handed thread may be cut on the bar. "By this means when

“ one part of the bar is worn it may be turned partly round
 “ to bring another portion into position for acting on the
 “ fabric.”

[Printed, 8d. Drawing.]

A.D. 1859, May 9.—No. 1160.

HADLOW, FREDERICK VERNON.—“ An improved stamp for
 “ marking linen and other wearing apparel.”

The invention is an improvement upon metallic type dies, stamps, and plates, “ and other means now in use ” for marking linen, &c., “ by substituting in lieu of the metallic “ type dies, stamps, or plates, type dies or stamps made of “ boxwood or other absorbent material with the letters, words, “ figures, or other devices thereon engraved or formed in bold “ relief. The marking ink now in use, or any other that “ may hereafter be found to be suitable for the purpose, may “ be applied to the type dies or stamps by means of a piece “ of woollen cloth laid upon a piece of india-rubber cloth or “ other flat non-absorbent surface, by saturating the woollen “ cloth with a small quantity of the marking ink, and then “ pressing the type dies or stamps above described upon the “ woollen cloth so saturated.”

[Printed, 4d. No Drawings.]

A.D. 1859, May 13.—No. 1205.

BEALE, JOSHUA TAYLOR, and KIRKHAM, THOMAS NESHAM.
 —“ Improvements in the preparation of colours for dyeing
 “ and printing.”

The invention consists in the use of aniline or the matters containing aniline for this purpose. To this end aniline or a salt of aniline is treated with a solution of chlorine or hypochlorite of lime or other soluble hypochlorite, with or without the addition of heat, and a fast dye obtained by the addition of a mineral or vegetable acid and alcohol. By this process dyes of various colours and tints may be obtained by the variation of the proportions of the ingredients. “ In “ addition to purple and lilac, which are the only colours that “ aniline has hitherto been found capable of yielding for the “ purposes of the dyer, we are enabled to obtain drabs, “ greens, blues, and reds of great beauty, and these colours “ may be varied in tint by the usual means and processes

“ used by dyers. To obtain a precipitate from aniline specially useful for printing purposes, we treat the aniline with chromic acid, and we are thus enabled to throw down, amongst other colours, a dark blue, green, or black, according to the strength of the solution employed.”

[Printed, 4d. No Drawings.]

A.D. 1859, May 14.—No. 1209.

GEDGE, WILLIAM EDWARD.—(*A communication from J. B. Thénault.*)—(*Provisional protection only.*)—“ Improvements in dyeing.”

The improvements, as described, are applicable, “ with slight variation,” to hemp, flax, &c. “ Say for 1 lb. (in weight) of cotton I take 6 quarts of water, in which I dissolve 2 oz. of soda crystals, I take other 2 quarts of water and dissolve therein about $\frac{3}{4}$ oz. of soda crystals, previously mixing in the water a small quantity of sheep’s dung, and add thereto from 2 to 3 oz. of oil, mixing the whole well at a moderate temperature. I now take the pound of cotton (which is previously alummed, dried, and softened in the air) and plunge it twice into the first preparation, which operation, being performed with celerity, only slightly soaks it. I wring it quickly, shake it out, and bring it down into the oil bath, where I work it as equally as possible until it has taken up all or nearly all the oil. The cotton may then be washed and dried quickly before dyeing with madder.”

[Printed, 4d. No Drawings.]

A.D. 1859, May 21.—No. 1257.

PERKINS, WILLIAM HENRY, and GRAY, MATTHEW.—“ Improvements in mordanting and dyeing fabrics of cotton and other vegetable fibres.”

1st. Ammonia mixed with carbonate of soda or other alkaline carbonate is employed in mordanting the fabrics with salts of lead preparatory to dyeing. “ In some cases we mordant the fabric both with lead and other mordants, such as iron, for example, before placing the fabric in the fixing bath, which then serves to fix both or all of the mordants applied.”

2nd. “ In dyeing fabrics of cotton or other vegetable fibre, dyes are sometimes employed which strike into the fibre

“ without requiring any mordant. Such are the colouring matters manufactured,” according to Patent No. 1984, A.D. 1856. “ Now the object of this part of our invention is “ to prevent such dyes from striking into the fibre except “ when mordanted, and this we do by mixing soap and oil or “ fatty matter in the dye bath in which the fabric is dyed.” “ It is then placed in the dye bath, which contains, as before “ mentioned, the colouring matter together with a solution “ of soap, and has oil or fatty matter floating on its surface. “ The colour will then be found to strike into such parts of “ the fabric as are mordanted without affecting the other “ parts.”

[Printed, 4d. No Drawings.]

A.D. 1859, May 23.—No. 1259.

PASQUIER, EUGÈNE.—“ Apparatus for drying wool and all “ filaceous matters.”

The invention is intended to obviate the difficulties experienced in drying wools, &c., after washing or dyeing, without subjecting them to too high a temperature, and consequently destroying the strength, pliancy, and beauty of the filaments. It consists of an apparatus containing different stories of endless wire gauze disposed upon cylinders. These stories are placed one above another, so that the matters which have passed through one part fall on another, which draws it the contrary way. The materials to be dried being thus turned several times, are conducted to the bottom of the apparatus, and are taken out in a suitably dry state without having been exposed to too high a temperature. Two ventilators are attached to the apparatus, which produce a double effect in drawing up the damp air and sending it to the bottom, through tubes warmed by steam or hot air from a warming apparatus at the bottom of the machine, so as to dry it before passing through the different layers of drying matter.

[Printed, 8d. Drawing.]

A.D. 1859, May 23.—No. 1263.

CRUM, WALTER.—“ Improvements in printing and dyeing “ textile fibres and fabrics.”

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The invention consists:—1st, in the application of gluten along with potash or soda, or the silicate of potash or soda, to cotton and other vegetable textile fibres and fabrics, as a mordant for attracting and fixing colouring matters; 2nd, in the purification of the mucilage used by rendering the gluten which it contains again insoluble and coherent, for which purpose it is mixed with a solution of carbonate of soda sufficient to saturate the acid which has been formed in it, the point of saturation being indicated by test paper in the usual way.

Instead of carbonate of soda, other substances, such as caustic soda or potash, or common salt, or nitric acid may be employed for reproducing the insoluble and coherent condition of the gluten.

[Printed, 4d. No Drawings.]

A.D. 1859, May 23.—No. 1265.

MASON, JOHN HUTCHINSON, and BAXTER, GEORGE LEE.—
“Ornamenting lace or other twisted fabrics.”

The invention consists in using one or more threads to produce patterns or ornamentation in lace or other twisted fabrics where two or more colours in one thread are used for employment in manufacturing bonnet and cap fronts and rouches, and for other purposes. A dye liquid of any required colour is prepared in the ordinary way; any number of skeins of silk, cotton, &c., or pieces of silk, lace, &c., are then wrapped round with string at certain distances, and according to the number of different colours that may be required on each thread. The skeins, &c., are then steeped in the dye, withdrawn, dried, and the string unwound. The material is then ready for use in the manufacture of bonnet and cap fronts, rouches, or other articles.

If two or more colours are required on one thread, the operation of wrapping string round them is repeated before dipping or immersing the same in the dye liquid.

[Printed, 4d. No Drawings.]

A.D. 1859, May 25.—No. 1288.

PRICE, DAVID SIMPSON.—“Improvements in the production
“ of colours for dyeing and printing.”

The invention consists in the employment of peroxide of manganese, or sesqui-oxide of manganese, or peroxide of lead, in a finely divided state, in conjunction with an acid solution of a salt of aniline, toluidine, or cumidine for the production of "violine," "purpurine," and "roseine." A mixture of the oxides of manganese and an acid solution of the before-mentioned bases is allowed to stand for a short time with occasional agitation. The precipitate is obtained by filtration, and washed until cleared of the salts of manganese. It is then boiled with dilute spirit to extract the colour, after which the spirituous solution is distilled. The residuum in the still is an aqueous solution of the colour, which can be used after filtration. Or the colour can be obtained by boiling the above mixture. A large quantity of it in that case goes into solution, together with the salts of manganese formed. From this solution the manganese is first separated by means of an alkaline carbonate. The filtrate from the carbonate of manganese contains the colour, which may be separated as in the process first described.

[Printed, 4d. No Drawings.]

A.D. 1859, May 28.—No. 1319.

CRUM, WALTER.—"Improvements in printing and dyeing
" textile fibres and fabrics."

The invention consists:—1st, in employing the caseous part of milk, together with an alkali, as a mordant or intermedium for the attracting and fixing of certain colouring matters on cotton and other vegetable textile fibres and fabrics; and, 2nd, in the preparation and application of gluten without the addition of alkaline matter as a mordant for the colouring matters already named.

For the first process, flour is kneaded as in the usual process of making bread, and the starch removed from the dough "by washing with water in the manner well known to
" starch makers." The gluten remaining is kept at summer heat until it becomes changed into a semi-fluid gummy matter miscible in all proportions with water. As regards the second part of the invention, caustic soda or potash is employed to dissolve the lactarine, and render it fit for being fixed as a mordant on the fabric, "in the manner following:—" "When

"soda is used I take one part (by weight) of lactarine as it is found in commerce, and add to it one and a half parts of water and one and a half parts of caustic soda, at 16° Twaddell; and the fabric to be operated on, after being printed or otherwise impregnated with this mixture, is then steamed in the usual way and afterwards dyed."

[Printed, 4d. No Drawings.]

A.D. 1859, June 2.—No. 1353.

WHITEHEAD, ROBERT KAY.—(*Provisional protection only*).—

"Improvements in apparatus to be used in bleaching, dyeing, and extracting the colouring matter from dye materials."

The invention consists in forming a vacuum by condensing steam in a vessel communicating with another in which are the articles to be operated upon. The latter vessel is in communication with an open vessel or vessels containing the bleaching, dyeing, or other agent employed. In performing the invention, "steam is admitted into the steam vessel, and then a valve is opened between the steam vessel and the vessel containing the articles to be operated upon, to allow the bleaching or other liquid to be forced through the materials to be operated upon, and into the steam vessel, by the pressure of the atmosphere acting on the liquid in the open vessel referred to. When the steam vessel is filled by the liquid, air is admitted from above, and the liquid descends again through the materials to be operated upon. These operations are repeated as often as is required, and the liquid can be changed to produce the desired effect."

[Printed, 4d. No Drawings.]

A.D. 1859, June 3.—No. 1368.

JOHNSON, JOHN HENRY.—(*A communication from William James Cantelo*).—"Improvements in reducing solid substances

"to powder, and in the machinery or apparatus employed therein."

The invention consists in placing the ends of blocks of the material or substance to be reduced opposite to and in contact with each other, and presenting them simultaneously and at the exact point or line of junction to the cutting edge of a circular or reciprocating saw or rasp, so that the cut will be

effected in the line of junction, and will cause the simultaneous reduction of each of the blocks, which after every through cut are again brought together in readiness for the succeeding cut. The apparatus consists of an ordinary circular saw and saw bench, the latter being provided with guide rails, between which slides, in a direction to and from the saw, a box containing the two blocks of material to be operated upon. This box is slotted transversely in the line of the plane of the saw to admit of the saw cutting through the blocks, and is further provided with slides worked by a right and left hand screw spindle, which slides by turning the spindle in a proper direction, approach each other, and force the contiguous ends of the blocks of material together after each cut. "This invention will also be found to be admirably adapted to the economic reduction of dyewoods in substitution for the costly and cumbersome machinery now employed for that purpose."

[Printed, 8d. Drawing.]

A.D. 1859, June 4.—No. 1378.

WOOD, JAMES, and WOOD, WILLIAM.—(*Letters Patent void for want of Final Specification.*)—"A peculiar mode or method of dyeing lace or other fabrics, and making the same into bonnet and cap fronts or other articles."

"Our invention consists in a peculiar mode or method of dyeing lace and other fabrics which are intended to be made up, and which we afterwards make up into bonnets or cap fronts, rouches, insertions, or other articles, and is as follows:—We first place the lace or other manufactured articles in such lengths or divisions as may be required, and then wrap them in cords suitable for our purpose; we then dip them in dye liquid so as to obtain any particular colour required."

[Printed, 4d. No Drawings.]

A.D. 1859, June 14.—No. 1435.

MACDONALD, ALEXANDER.—"Improvements in machinery or apparatus for punching patterns or devices upon metallic printing rollers or cylinders."

The invention consists in causing a hammer to strike the pattern punch, and thereby impress or stamp the cylinder

with the said pattern. "This has hitherto been accomplished by hand, and my improvement consists in the novel adaptation and application of a self-acting motion for causing the hammer to be lifted and the punch to be struck" "with regularity of time and intensity of depth or pressure." The apparatus consists of an arrangement of compound levers, coupling rods, and ratchet wheels, in connection with a pattern disc or wheel and "pitcher," such arrangement receiving motion from a crank driven by an ordinary rotating driving wheel and shaft.

[Printed, 1s. Drawings.]

A.D. 1859, June 16.—No. 1454.

NEWTON, ALFRED VINCENT.—(*A communication from Freeborn Adams.*)—"Improvements in casting cylinders and tubes."

It being exceedingly difficult to produce, by the ordinary methods, a cast copper tube or cylinder without blow holes, this invention is to remedy this evil.

"This invention relates to the employment of a vertical mould, fitted with a central core, and so arranged that it may be rotated upon its axis, as the melted metal is poured in, by which the latter is caused to run into the mould around every side and no considerable disturbance of the mass of the metal in the mould is occasioned. The mould is formed of two halves, held together by clamps, and secured by pins to a bed, which is mounted on the top of a rotating shaft. Within the mould is a moveable bottom, which may be raised or lowered according to the length of tube or cylinder required, and upon this bottom rests the core, the upper end of which is steadied and held in place by metallic straps, made so thin as not to break the stream or interrupt the regular distribution of the metal as it descends into the mould. The core bar is made hollow, and perforated with holes, and when used it is to be covered with a coating of moulding sand, through which the gas and steam pass to the interior of the bar."

[Printed, 6d. Drawing.]

A.D. 1859, June 21.—No. 1493.

PARKES, ALEXANDER.—"Improvements in the manufacture of cylinders and tubes of copper and alloys of copper."

In forcing metal through dies, instead of having the metal of uniform thickness, the discs are made thicker in the middle than the edges before raising the metal into or through dies or holes.

Cylinders or tubes of copper or its alloys are made without solder, by bending sheet metal. These cylinders are heated in a furnace, and then the fitting edges are united by the use of jets of oxyhydrogen flame.

Another part of this invention consists in the employment of a mandril of a slightly smaller size than the inside of the cylinder. The rolling of the cylinder when upon this mandril may be used to thin the metal, &c.

Short cylinders are made by punching out the central portion of a block, the metal is swelled by punching.

The drawing or rolling of a cylinder may be alternated between hexagonal and round holes or rolls.

Forming blocks of copper "with several holes at equal distances apart and parallel to each other." These blocks are rolled out into sheets which are cut longitudinally into strips from which cylinders are opened out.

Another part of this invention consists in making cylinders of copper with an internal double cone, the smaller portion being in the middle.

A portion of the outside of a printing cylinder is sometimes turned off, leaving the full thickness of metal in the middle to facilitate the the drawing.

The cylinders mentioned seem to be adapted to calico printing.

[Printed, 4d. No Drawings.]

A.D. 1859, June 24.—No. 1522.

FAURE, PROSPER, and PERNOD, JULES.—"An improved process for utilizing the residues of madder in the manufacture of garacine and other preparations of madder."

The object of the invention is to obtain in a solid state the matters held in solution in the wash-waters and vinasses (weak wines) of distillation in the above manufacture, which "until now have been lost." The process consists, first, in collecting in a reservoir the acid waters, either alone, or previously mixed with the vinasses obtained from the distillation of the red waters of madder. Secondly, in evaporating the said

waters in a brick oven similar to that employed in the concentration of saline solutions for the manufacture of carbonate of soda. This oven receives the waters, and is in direct communication with a furnace in action. In the manufacture of garancine, this oven serves also for heating the drying stoves, and hence, the same fuel answering both purposes at once, "the small cost of this new product."

[Printed, 4d. No Drawings.]

A.D. 1859, July 2.—No. 1583.

WILLIAMS, CHARLES HANSON GREVILLE.—"Improvements
" in dyeing fabrics and yarns."

"For this purpose I employ the crude precipitate obtained
" by the addition of chromic acid, bichromate of potash, or
" other suitable salt of chromic acid, or permanganate of
" potash or soda, to aniline, toluidine, xyloidine, and cumidine,
" in place of employing such precipitates previously purified
" by treatment with liquids which dissolve out the impu-
" rities." "I employ the crude precipitates in the following
" manner:—After the precipitate is formed, it is thrown on a
" filter, and water is run through it. The precipitate is then
" again mixed with water, and the fabric or yarn to be dyed
" is boiled with it. When the fabric or yarn is taken out,
" it appears of a blackish colour, and by afterwards washing
" it with soap and water, it gradually assumes the desired
" colour or tint. If the crude precipitates, when prepared,
" are not required for immediate use, they may be dried,
" but when this is done, in order to cause them again to
" mix with water, it is necessary to moisten them with alcohol,
" fusel oil, sulphuric acid, or ammonia." The crude precipi-
" tates are refined by the agency of turpentine or caoutchène
" in place of the solvents heretofore employed."

[Printed, 4d. No Drawings.]

A.D. 1859, July 6.—No. 1601.

LUIS, JOZÉ.—(*A communication from Eugène Pasquier*).—"An
" apparatus for washing wool, manufactured or not, and all
" other matters."

The object of this invention is the construction of an ap-
paratus "capable of being worked in any part where water

“ can be procured,” “ thus avoiding the hitherto necessary condition of being placed on a running stream, which is not always attainable in the neighbourhood of manufacturing towns.”

The apparatus consists of a cylindrical vessel mounted upon an upright shaft which is caused to rotate by means of friction discs. The material to be washed is placed in this vessel, the apparatus is immersed in water to a certain depth, and as it rotates, “ conical sinks or cones ” arranged in the lower part of the vessel, round the upright shaft, “ oblige the water to descend, throwing it in every direction so as to agitate it violently.” The upper part of the cylindrical vessel is surrounded by a conical vessel, attached to it, and the water is thrown from the cylindrical vessel into the conical one through holes in the former, or by the upper part of the cylinder being made of wire gauze, the water thence passing off into a trough and being carried away by a pipe with which the latter is furnished. In cases where the agitation of the water by the rotation of the apparatus is not sufficient completely to cleanse the materials under operation, a stamper is used, which may be actuated by means of a crank or eccentric; or a plunger or fork may be used in place of the stamper. Instead of immersing the apparatus in water, a supply of the latter may be introduced at the top of the machine, and other modifications of the apparatus be made.

[Printed, 1s. 2d. Drawings.]

A.D. 1859, July 11.—No. 1650.

HARTMANN, JULES ALBERT.—(*Provisional protection only.*)—

“ Improvements in the manufacture of colours for printing cotton and other vegetable fibres and silk.”

“ I manufacture these colours by mixing red madder lake (*laque rouge de garance*) with fatty oily substances and acids. I thicken and after printing I steam and wash as is ordinarily done. I employ acids for dissolving the mineral base of the lake, so that the solution will precipitate the coloured lake in the presence of a solvent of the colouring matter in the fibres of the tissue during the steaming operation. This solvent must be an organic chemical substance capable of dissolving the colouring matter in sufficient quantity. All oily fatty substances, oils the result of distillation,

“ essences and similar products, creosote, ether, and their
 “ derivatives capable of dissolving the colouring matter, may
 “ be employed. I operate with black as well as with red lake.
 “ To make black lake I mix oxides of iron or precipitates of
 “ iron salts with extract of madder, to saturation with water
 “ or a solvent. In order to obtain steam colours, I mix in a
 “ concentrated state extract of madder, the mineral base, an
 “ acid, and the solvents before indicated.”

[Printed, 4d. No Drawings.]

A.D. 1859, July 20.—No. 1708.

ORIOLI, ZEPHIRIN GASPARD ALEXANDRE NATHAN PETRONE.—

“ New applications of hypochloride of alumina to bleaching
 “ and dyeing, and to the disinfection and preservation of
 “ organic matters.”

This new agent exists only in solution in water, and is obtained by a double decomposition of hypochloride of lime and sulphate of alumina in equal quantities. By mixing solutions of these two salts a chemical action is produced, forming instantaneously sulphate of lime, and also producing hypochlorite of alumina. In common with chlorine and hypochlorite of lime, with the addition of an acid this salt acts very rapidly on all colouring matters of organic origin, but it has the advantage over these agents of remaining entirely neutral during the period of action. Thus, fabrics in which hypochlorite of alumina is used as a decolouring salt will not become brown after bleaching. Thread or cloth is bleached by being washed in lye and plunged in a bath containing 2 lbs. of hypochlorite of alumina for every 100 lbs. of bleaching material.

The salt may also be very advantageously substituted for acetate of alumina as a mordant for dyeing, as it contains no trace of iron.

In the manufacture of printed calicoes, &c., hypochlorite of alumina, thickened with gum, dextrine, &c., may also be used as a mordant for printing, the stuff being previously submitted to heat for the purpose of removing the hypochlorous acid.

The salt may also be applied to the preservation of animal matters, anatomical preparations, and embalming bodies, &c.

[Printed, 4d. No Drawings.]

A.D. 1859, July 21.—No. 1713.

ROBSON, ISAAC.—(*Provisional protection only.*)—"Improve-
ments in means or apparatus for drying and cutting cotton
warps, after being dyed or sized, or after any other process
of wetting, and when quick drying is required."

The invention consists of a machine composed of a series of rollers, placed either at the top and bottom of the machine or at each end of it, and fixed in a chamber or enclosed space through which a current of hot air is forced by a fan or other suitable means. "The rollers are so arranged that the warps, in passing through the machine, will be exposed to a free current of air; and in order to prevent entanglement and the risk of breakage, I employ two endless webs of netting or other open fabric to pass over the whole set of rollers, which nets are so contrived that the warps can be admitted between them at one end of the machine, and after travelling together through it they may be delivered at either end according to circumstances." The warps are taken from the machine by a cutting or folding apparatus.

[Printed, 4d. No Drawings.]

A.D. 1859, July 25.—No. 1729.

DAVIES, GEORGE.—(*A communication from François Xavier Hurstel.*)—"Improvements in dyeing yarns, threads, or woven fabrics of wool, silk, cotton, linen, or other fibrous or filamentous material."

The invention relates principally to a method of dyeing the fibrous materials on the bobbins, spools, tubes, or other form in which they are delivered from the spinning machines. It is also applicable to dyeing the same in skeins or woven fabrics, imparting "to them a brilliancy which cannot be obtained by the ordinary process." Two modes are adopted for forcing the mordant and the dye through the bobbins, in order that all the threads, even the innermost, may be equally imbued; the first being that obtained by a pressure inferior or equal to the pressure of the atmosphere, the second that effected by a pressure superior to it. The material may, under the first head of the invention, be placed on the perforated false bottom of an open vessel to the required depth, and covered with a perforated plate or grating. The dye or other

liquid being admitted above, the air is withdrawn from the space between the false and real bottom of the vessel by means of a pump, and thus the liquid and air are drawn through the material, and effect a thorough penetration. Under the second head of the invention, the material is placed on a perforated false bottom in a closed vessel, and the liquid forced upwards through it, driving the air in the material and the vessel before it. The air escapes by a valve.

In all the vessels (whether open or closed) there is placed in the space between the false and real bottom a coiled pipe, through which steam is allowed to circulate to keep the liquid employed at any desired temperature.

[Printed, 1s. Drawings.]

A.D. 1859, July 27.—No. 1743.

DICKINS, THOMAS.—(*Provisional protection only.*)—"Improvements in dyeing and discharging warps and other yarns or threads and woven fabrics of silk, wool, and other fibrous materials."

The invention relates to a method of protecting any desired parts of warps or other yarns or threads and woven fabric from the action of dyes or discharging matters into which they are dipped. "Suppose it be desired to so treat a warp, I place on either side thereof bars or other rigid pieces, which I cover with india rubber or similar elastic material. These are then drawn tightly together, so as to prevent the dye from entering the portions of yarn which they cover. The yarns I wind upon a frame, and subsequently slacken them so as to allow the dye or discharging matter to penetrate the exposed portions; or I cause the yarns with the aforesaid bars or other protecting apparatus to be lowered into the fluid, and to be raised therefrom by revolving drums or rollers." The inventor states that he contemplates the application of the invention to woollen fabrics also.

[Printed, 4d. No Drawings.]

A.D. 1859, July 27.—No. 1744.

SCOFFERN, JOHN.—"Improvements in waterproofing, cementing, and stiffening fabrics and fibrous materials, and also in dyeing fabrics and fibrous materials."

The subject of the first part of this invention does not belong to the present series of Abridgments.

The solution of silk in copperized ammonia, has a lustrous black colour, and may be used as a varnish for cloth, paper, leather, &c. In order that vegetable fabrics or fibrous materials may take the dye more readily, they are prepared with a solution of animal matter.

[Printed, 4d. No Drawings.]

A.D. 1859, August 5.—No. 1808.

PATTISON, ROBERT THOMSON.—(*Letters Patent void for want of Final Specification.*) — “Improvements in dyeing certain woven fabrics.”

Cotton cloth is printed with a preparation from milk described in No. 12,316 A.D. 1848, for an “improved preparation or material for fixing paint, or pigment colours on cotton, linen, woollen, silk, and other fabrics,” and when so printed is exposed to the action of steam “in the usual manner.” The cloth is then dyed in a preparation of orchil and slaked lime mixed in water. Calcined magnesia and barytes may be used as substitutes for the lime. The colouring matter of the orchil, mixed as above, adheres to the preparation of milk printed on the cloth, and thus the colouring matter is fixed mechanically on the fabric.

[Printed, 4d. No Drawings.]

A.D. 1859, August 8.—No. 1830.

BOUSFIELD, GEORGE TOMLINSON. — (*A communication from Messrs. Andrès, Burdel, and Chicard.*)—(*Provisional protection only.*)—“Improvements in revivifying the scarlet color of woollen cloth, lace, and embroidery in use for military and other garments and furniture.”

These improvements are, dissolving 300 grains of powdered citric acid in 4500 grains of cold water, dissolving 150 grains of powdered carbonate of potash in 3000 grains of cold water, and adding the two solutions together. The solution may be colored by carmine or otherwise. In place of citric acid “other acids or acid salts, such as oxalic acid, tartaric acid, cream of tartar, nitric acid, sulphuric acid, salt of sorrel, or other acid salt capable of producing the same effect” may be used, but

citric acid is preferred. The above solution is employed as follows:—"1st. Brush the article of scarlet wool when dry; "2nd, rub the part to be cleaned and revived with a brush "dipped in the composition, and allow it to soak into the "wool during 10 or 15 minutes, more or less; 3rd, clean it "again with a brush moistened with the same composition "until the wool becomes a deep red colour and allow it to "dry. The operation of cleaning and revivifying is then "terminated."

[Printed, 4d. No Drawings.]

A.D. 1859, August 13.—No. 1870.

GREEN, WILLIAM, FAWCETT, WILLIAM, and FAWCETT, FRANCIS BEST.—"Improvements in the manufacture of rugs."

The invention, which "has reference to the introduction of "ornamental patterns or designs in beam rugs, in place of "plain striped borders and central mixture as heretofore, and "the production of a superior effect in the centre of the same, "as also obviating the tendency of the pile to be opened or "widened by the fine weft," consists in printing the whole of the warp, both border and centre (or the border only) and combining such printed warp with the usual texture or fabric of a beam ring.

[Printed, 4d. No Drawings.]

A.D. 1859, August 22.—No. 1920.

PARKES, HENRY.—"Improvements in the manufacture of "cylinders and tubular or hollow bodies of copper and alloys "of copper or other ductile metals."

One of the purposes of this invention is to manufacture rollers for calico printers.

1st. The re-manufacture of worn out calico rollers, "or "cylinders of a like kind which have not been used for such "purpose, so that the same may be used for printing from." The annealed roller is closed flat at a red heat, and rolled or drawn through holes; it is then opened at a red heat, annealed, and a mandril drawn through the metal. This operation is repeated until the metal is opened out into a cylindrical shape. The cylinder is finished "by drawing it on a mandril at a "drew bench through holes," or otherwise.

2nd. The production of the above-named bodies by casting ingots rounded at the edges and with a slit through them, and by drawing them flat through holes or rolls, then opening the flat metal to the cylindrical form, as in the 1st improvement.

3rd. The mandril over which the said cylinders are drawn is made with a short end of steel, instead of entirely of steel. The stem is slightly thinner than the short end, and is made of iron. The end of the cylinder is thus opened out, and the cylinder may, with ease, be drawn or rolled.

When shells are used the cast body is drawn on a conical mandril and made to fit thereto. The body supported by the mandril is then inserted into a shell which is drawn or rolled down.

When making cylinders with bevil joints the bevil is given by draw plates, or may be produced by rolling the edges down.

[Printed, 4d. No Drawings.]

A.D. 1859, September 3.—No. 2021.

LAUTH, BERNARD.—“Improvements in the manufacture of rollers or cylinders for calico printers, and of the tubes of copper or brass, or mixtures of those metals.”

The invention relates to a method whereby cylinders for printers and tubes are brought to any required gauge, and to a smoothness of surface, whereby the operations of turning or drawing through plates are rendered completely or in great part unnecessary, and consists in submitting the articles to the pressure of rollers, through which they are drawn after the manner of a draw bench, or the rollers themselves may be made to traverse. The grooves in these rollers are widened towards their outward edges, so as not to produce a rib or feather, and the articles are turned at periods, so as to bring fresh portions of their peripheries into action.

[Printed, 10d. Drawing.]

A.D. 1859, September 13.—No. 2086.

LEBOURGEOIS, ERNEST AUGUSTE FREDERIC. — “An improved machine for providing with pin points the blocks employed for surface printing [on calico, paper, or other similar materials.]”

By this invention the pin points are inserted mechanically, however complicated the pattern. The machine consists of a table with a vertical frame which carries the principal moving parts of the machine, and of a reel or drum carrying the wire from which the pin points are successively cut off at the required length. The end of the wire is taken between the nippers of a pair of pincers, which, at each lowering of the treadle and lever mechanism connected therewith, open and advance the required distance, then close, and, in receding, carry with them the wire, the end of which passes through a suitable guide tube, and is thus brought under a sort of knife acting as a saw, while at the same time a revolving motion is given to the wire, and the wire cut off thus assumes a pointed form. The pin point thus cut off falls into a vertical tube by which it is guided to the end of a second tube inclosing the first, while the workman now acting on the treadle causes the lower end of the latter tube to press on the top of the pin point, and thereby forces the latter to enter a suitable depth at the required spot in the surface of the block placed on the table underneath, after which the tubes are lifted to their original positions by springs. These tubes are inserted in a guide tube, and receive motion from a lever arm connected with and acted on by the treadle. The workman is thus enabled to cause the block on which the pin points are to be implanted to slide over the table under the pressing tube, as required by the pattern, the outlines of which are previously delineated on the surface of the block.

[Printed, 1s. Drawings.]

A.D. 1859, September 14.—No. 2095.

BESLAY, CHARLES.—“Improvements in preparing and obtaining printing surfaces with designs sunk, as also in relief.”

The invention relates to the manufacture of blocks, plates, cylinders, matrices, stamps, seals, &c., hollow or in relief, direct, without the aid of an engraver, from drawings, &c., executed on glass or other translucent bodies. The design, &c., is drawn on a coat of varnish spread on a sheet of glass. Increased thicknesses of varnish are applied in parts where large blanks or whites are to appear in the print. “Having so prepared the glass plate, which may be done by an artist or draughtsman,” “I now immerse it in a bath of a galvanic

“ battery, and deposit upon it by electrical deposit a coating
 “ of copper or other suitable metal. When this metal coating
 “ is of sufficient thickness, I remove it from the bath and glass
 “ plate, and I have a surface representing in relief the design
 “ produced on the varnished glass, which may be printed from :
 “ I first back it with lead or other metal and wood to make up
 “ the strength and thickness required, as well understood in
 “ printing from galvano-plastic casts.”

[Printed, 4d. No Drawings.]

A.D. 1859, September 21.—No. 2149.

BLAIR, JOHN.—“ Improvements in the treatment of yarns
 “ during the operation of spinning, which treatment is also
 “ applicable in ‘ roving,’ ‘ slubbing,’ or ‘ doubling’ machines.”

The invention consists:— 1st. Particularly in the novel
 application of sizing matter to yarns at a certain period of
 their manufacture prior to or during the operation of spinning,
 “ that is to say, the yarns are to be saturated with sizing
 “ material between the front drawing rollers and the spindles
 “ by means of a trough and rollers conveniently situated for
 “ the purpose, the sizing roller being in contact with the
 “ yarns.” 2nd. “ In the application of dyeing materials or
 “ other liquids to yarns at such said period, the sizing, dye-
 “ ing or other liquids being applied to the yarns by means of
 “ a suitable arrangement of rollers and troughs or receptacles
 “ for the liquids through which they are passed, and placed at
 “ any required position or place in contact with the yarns
 “ between the drawing rollers and spindles, such apparatus
 “ and treatment being equally and similarly applicable to
 “ roving, slubbing, and doubling machines.”

[Printed, 4d. No Drawings.]

A.D. 1859, September 26.—No. 2176.

KAY, RICHARD.—“ Improvements in preparing and bleaching
 “ textile fabrics and materials, and in the machinery or
 “ apparatus employed therein.”

The apparatus consists of two open chambers or vessels, the
 smaller one, the bottom of which is level with the top of the
 larger one, containing the bleaching liquor. From this vessel
 a pipe conducts the heated bleaching liquor into the open top
 of the larger chamber. This chamber, the bottom of which

is convex, has a perforated false bottom with a central hole in it. Over this hole is a vertical steam pipe of large diameter nearly reaching to the top of the chamber, and having on its upper end an adjustable valve with a spreading cap or convex shield piece. Another steam pipe opens into the space between the real and false bottoms. In commencing to bleach with this apparatus, the goods are laid on the false bottom, and the valve on the top of the steam pipe being closed, the steam is restrained in that direction, but passes through the false bottom directly into the mass of goods. When the goods are sufficiently steamed, the steam is shut off, and a quantity of hot bleaching liquor allowed to run in upon the goods. Steam is then readmitted beneath them, when the bleaching liquor flows down through them and fills the space beneath the false bottom. The readmitted steam enters the liquor collected at this part and forces it up the central pipe against the interior of the top cap or spreader above the valve, thus causing a constant current of hot liquor through the mass of the goods.

[Printed, &c. Drawing.]

A.D. 1859, October 5.—No. 2262.

NEWTON, WILLIAM EDWARD.—(*A communication from Seth W. Baker.*)—"Improvements in blankets used for printing "calicoes and other fabrics, and in the mode of washing or "cleaning the same."

The invention consists:—1st. In forming a new kind of seamless elastic blanket having either its edges or whole surface sufficiently roughened to prevent the colouring matter received by it from the printing rollers from running or flowing back upon the edges of the fabric being printed. The composition of the blanket is, rubber or gutta percha, 8 lbs.; zinc, 4 lbs.; sulphur, $\frac{3}{4}$ lb.; and magnesia, $\frac{1}{2}$ lb. The composition is rolled into a sheet "in any of the modes well known "by rubber manufacturers." The ends are united and the sheet vulcanized "in the usual manner." A roughened selvage is then formed on the blanket, or the whole surface may be scored by the use of emery wheels, &c. These new printing blankets may be used for printing wall or other papers. 2nd. In the arrangement of apparatus by which the endless gum-elastic or vulcanized india-rubber or other bands or

cloth, after passing through the printing machine and receiving the surplus colouring matter upon them, are made to pass over rollers and other contrivances revolving in water, and thence between two smooth squeezing rollers, one of which has a scraper attached to it. By these means the colouring matter is removed from the cloth, while the rollers and scraper partially dry it.

[Printed, 1s. 4d. Drawings.]

A.D. 1859, October 13.—No. 2332.

HOLDEN, ABRAHAM, and HOLDEN, JAMES.—(*Provisional protection only.*)—"Improvements in machinery used in washing, dyeing, sizing, and drying yarn and thread."

The invention consists of a machine in passing through which yarn or thread is subjected to the various processes of washing, dyeing, sizeing, and drying consecutively and without stopping, "that is to say, the yarn or thread, which is supplied to the machine in the form of cops or wound on bobbins, is taken over guides and conveyed into a cistern containing hot water or other fluid by which it is washed. It then passes between squeezing rollers, and then passes through one or more vats containing the dye material; then it again passes between squeezing rollers, and afterwards it is again washed, and then taken through a cistern containing the sizing material. It then again passes between squeezing rollers, and then over one or more heated tin drums, by which the yarn or thread is dried; after which it is wound again on to bobbins, spools or rollers. By means of these improvements, any convenient number of yarns or threads can be operated upon simultaneously."

[Printed, 4d. No Drawings.]

A.D. 1859, October 15.—No. 2356.

HENRY, MICHAEL.—(*A communication from Jean Baptiste Berthand, the younger.*)—(*Provisional protection only.*)—"An apparatus for washing hanks, skeins, threads, and yarns of silk and other fibrous materials."

"A number of rollers or cylinders are employed, or ranged in pairs; on each pair is placed a number of skeins, or suitable quantity of the silk or material to be washed;

“ water or washing liquor is admitted at any convenient part
 “ and flows into proper vessels contrived for its passage
 “ beneath and against the cylinders, to which rotary motion
 “ is communicated in a direction opposite to that of the
 “ inflow, when desirable. Suitable adjustments may be added
 “ for bringing the cylinders nearer to or farther from each
 “ other, thus stretching the skeins, threads, or yarns on them
 “ more or less, and also for raising and lowering the water
 “ passages and vessels to and from the cylinders, so that the
 “ matters to be washed may be readily placed thereon. In
 “ the arrangement preferred, an inclined plane is employed
 “ to impart to the water a velocity about equal to that of the
 “ cylinders which are, actuated by pinions engaging a worm
 “ driven by handle, steam engine shaft, or other moving
 “ agent; one of each pair being so in gear, and the other
 “ driven by friction of the material, or motion may be other-
 “ wise communicated; a lever or a lift jack may be used
 “ for raising and lowering the water or liquor troughs, and
 “ the cylinders may be adjusted by a bar with rack at one
 “ end, in gear with a bar working frames or carriages that
 “ support the cylinders.”

[Printed, 4d. No Drawings.]

A.D. 1859, October 18.—No. 2385.

ROTT, AUGUSTE SCHEURER. — “ The preparation of certain
 “ substances for fixing colours for dyeing and printing, and
 “ for other purposes.”

The products obtained from gluten by this invention may be substituted for albumen in the fixing of colours in dyeing and printing, &c. Gluten is macerated in water containing $\frac{1}{1000}$ th part of acid, hydrochloric, acetic, nitric, sulphuric, phosphoric, lactic, or similar acid. If this solution is made to boil, a regular coagulum is formed similar to that of albumen. By separating the coagulated parts by filtration, and then saturating the liquor with an alkali, a flocculent precipitate is deposited. This product is very distinct from gluten. It is insoluble in water, little soluble in alkali, but very soluble in acids; and in proportion to its insolubility the colours resist the action of water and soap. “ For printing
 “ upon fabrics, it suffices to incorporate with the paste the
 “ colouring matters to be fixed by it; or the products

“ derived from gluten may be fixed, and their coloration
“ effected by printing or dyeing in various colouring matters.
“ Violet from aniline dissolves in it perfectly, but in order
“ to produce dark shades of this colour, it is better to add a
“ few drops of acetic or other like acid. After printing, the
“ fabrics are steamed, as is usual in colours fixed by albumen.”
[Printed, 4d. No Drawings.]

A.D. 1859, October 27.—No. 2461.

BROOMAN, RICHARD ARCHIBALD. — (*A communication from Messieurs Renard, Frères.*)—“ Improvements in the preparation
“ of red colouring matters or dyes.”

This colour is obtained:—1st. By mixing aniline with anhydrous bi-chloride of titanium, anhydrous bi-bromides of tin or of mercury, or anhydrous iodide of tin, and heating the mixture to boiling point, and in treating it in the manner in which the mixture of aniline with bi-chloride of tin is directed to be treated in No. 921, A.D. 1859. 2nd. By boiling a mixture of aniline and dry hydrated bichloride of tin (oxymuriate of tin, permuriate of tin). It is then cooled and boiled in clean water, producing a brownish solution containing the colouring matter combined with hydrochloric acid. The colour is separated by adding a basic salt, or one capable of saturating the acid combined with the colouring matter. 3rd. By boiling toluidine or cumidine together with one of the salts before stated, and by operating as above described. 4th. By heating to boiling point toluidine or cumidine with one of the following metallic compositions:—Anhydrous bi-chloride of tin, anhydrous bichloride of mercury, anhydrous perchloride of iron, anhydrous protochloride of copper. After boiling a few minutes the mixture becomes red; it is then boiled in water to dissolve it, and filtered hot; the filtered liquor is fit for use as a red dye, or the colouring matter may be precipitated by one of the salts above mentioned, *i.e.*, alkaline or earthy carbonates, phosphates, pyrophosphates, acetates, &c.

[Printed, 4d. No Drawings.]

A.D. 1859, October 29.—No. 2473.

LISTER, SAMUEL CUNLIFFE, and WARBURTON, JAMES. —
“ Improvements in dyeing silk, cotton, China grass, and
“ similar vegetable fibre, and in preparing and spinning
“ coloured and mixed coloured yarns from such fibres.”

The invention consists:—1st. “In dyeing waste silk before dressing or combing it, also after being jigged (*i.e.*, once roughly combed or dressed), and then recombining the dyed silk; also in dyeing the combed or dressed sliver of silk before being spun; also in mixing two or more colours before being dressed or combed, or when carding combed or dressed silk, or in the drawing operations before being spun, or at the time of spinning; also in mixing dyed silk, such as above described, with wool, hair, cotton, flax, or similar fibre, the waste silk being dyed and mixed before being spun.” 2nd. “In dyeing cotton, flax, China grass, or similar fibre, in the raw state, that is, before being dressed or combed; also jigging such fibres, and then dyeing and then recombining them; also dyeing such fibres before being spun, after being combed or dressed; also mixing two or more colours of different or similar fibres before being combed or dressed, or when carding such combed or dressed fibres; also in mixing such coloured, combed, or dressed fibres before being spun.”

[Printed, 4d. No Drawings.]

A.D. 1859, November 1.—No. 2492.

PERKIN, WILLIAM HENRY.—(*Letters Patent void for want of Final Specification.*) — “Improvements in the manufacture of colouring matters.”

For this purpose, aniline or its analogues, such as toluidine, xylydine and cumidine, is combined with perchloride of mercury, which is heated to ebullition (about 180°), and maintained at that point for about half an hour. The product is a deep red liquid, which solidifies on cooling. This is boiled in a large quantity of water for some time; the aqueous liquor is then decanted or filtered, and set aside to cool. This process is continued till the water employed ceases to dissolve any mercury salts from the residues. The liquors thus obtained deposit all the colouring matter they had taken up on cooling, while all the soluble mercury compounds remain in solution. These liquors are filtered for the purpose of collecting all the colouring matter, which is added to the residue and boiled up in alcohol, which dissolves all the colouring matter from the residue. This, when filtered, is ready for use.

[Printed, 4d. No Drawings.]

A.D. 1859, November 9.—No. 2548.

FULTON, DAVID. — (*Provisional protection only.*) — “Improvements in cylinders or rollers for printing and other purposes.”

In this invention, a comparatively thin external shell of copper may be used. The taper mandril has placed on it a metal expanding shell which is divided at one side from end to end. The expanding shell, being powerfully slid towards the larger end of the mandril, is forced out to fit the internal surface of the external shell.

“In the case of rollers of large size, cylindrical filling up slips may be fixed on the mandril, being tapered externally to fit the expanding shell or slip. The expanding slip or slit shell may be used in the construction of cylinders or rollers for calico printing, calendering, embossing, and for various other purposes. For the purpose of being engraved a thin copper roller may be mounted on a mandril, in the manner herein-before described, or it may be held by means of short conical end pieces, such as are ordinarily used; but to prevent these from opening out the ends of the rollers, in consequence of bearing on the extreme edges only, rings of a moderate depth are inserted at each end, their external surfaces bearing against the internal surface of the copper roller, whilst they are coned internally to fit the conical end pieces on the mandril, where the mounting and centering appliances on the engraving machine consists of a number of radial screws tapped into rings or rollers on the mandril; rings are applied inside the copper collar for the radial screws to bear against.”

[Printed, 4d. No Drawings.]

A.D. 1859, November 11.—No. 2565.

BROOMAN, RICHARD ARCHIBALD. — (*A communication from Jules Michel Isidore Melotte and Charles Jules Thiesset.*) — (*Provisional protection only.*) — “An improved method of preparing plates and cylinders for printing from.”

As many proofs of the design are drawn from a lithographic stone as there are to be colours. Each colour and the register are produced in gum, and the design covered with lithographic ink, and allowed to dry. The stones are acidulated, gummed,

and ungummed: then all the design produced by the gum become white. Proofs of the design are taken in lithographic transfer ink and transferred to polished metal plates or rollers. They are inked and powdered over with bitumen. When the ink is dry, the parts not protected by the bitumen are bitten out with acids. If rollers are used, there must be as many of them as there are colours. The material to be printed is stretched on a bed, over which a light metal frame carrying the printing plate is placed. Four points fixed upon the table enter the registers in the plate, after first passing through the material to be printed. The frame is then lowered, and the required colour applied by a brush or wad. The colour appears on the material through all the cut out parts of the plate. The frame is then raised, the material removed from the points, reprinted, and the frame with another plate is brought down to apply another colour, and so on for as many different colours as are to be printed.

[Printed, 4d. No Drawings.]

A.D. 1859, November 15.—No. 2587.

DONALD, JAMES, and SMITH, PETER.—“Improvements in
“ apparatus for raising and for extracting liquids.”

The apparatus for raising liquids is especially applicable to the case of corrosive liquids, “such for example as are used by
“ bleachers.” In its simplest form the apparatus comprises a condensing vessel from which a pipe leads down to the reservoir containing the liquor. The latter is made to rise by the production of a partial vacuum by means of steam in the condensing vessel, from which the liquid is discharged by valves into the tank or vessel in which it is required. A self-acting contrivance is provided for admitting and shutting off the steam as the condensing vessel becomes filled or emptied. For extra heights, the apparatus may be arranged to lift the liquid from one stage to another in succession. In applying the apparatus for extracting liquids or moisture from various substances, a condensing vessel is put in communication with an otherwise closed space at one side of the substance, or at one side of a strainer upon or against which the substance is placed, the atmospheric pressure being allowed to act upon the other side of the substance.

[Printed, 8d. Drawing.]

A.D. 1859, November 15.—No. 2594.

PERKIN, THOMAS DIX.—(*A communication from Rudolph Knosp.*)—"Improvements in the manufacture of colouring matters."

For this purpose aniline or its analogues, such as toluidine, xyloidine, cumidine, is combined with the per-nitrate or the sub-nitrate, or the per-sulphate, or the nitrite of mercury, and kept heated to ebullition until it becomes red. The colouring matter is extracted from this by repeated boilings with water, and may be obtained in a solid state by evaporating the water, or by precipitation.

[Printed, 4d. No Drawings.]

A.D. 1859, November 23.—No. 2650.

KEATES, WILLIAM.—"An improved mode of manufacturing or forming the foundation or body of compound cylinders used for printing or embossing fabrics."

The invention consists in taking a solid cylinder of metal and inserting it within the outer shell of copper or other metal or alloy forming the printing or embossing surface, or the inventor casts the said solid cylinder directly within the outer shell of copper, &c., and having by either of these modes or any analogous mode obtained a solid cylinder of one metal within an outer shell of another, he bores out of the centre of the solid cylinder a suitable aperture to receive the printing mandril, and also, where the same is required, a nib or slot is formed within such aperture, to fit into a corresponding slot or nib upon the printer's mandril. "The compound cylinder thus formed is finished or made ready for the engraver by all or any of the usual processes of hammering, rolling, drawing, turning, and polishing."

[Printed, 4d. No Drawings.]

A.D. 1859, November 26.—No. 2675.

SCHEITHAUER, FERDINAND.—"An improved machine for printing woollen and other fabrics."

The invention consists of a frame with a carriage formed in parts, or with openings, the two largest of which are closed by two trellises, formed with wooden laths and divided into frames hinged at the corners; these frames are moved vertically, and take up the colour underneath. The printing

plates are screwed to the lathwork by fly screws; to the middle of the trellises are attached iron rods held in their positions by inclined pieces provided with a link. At their upper extremities two wooden standards are fixed upon the carriage, and upon the top of the standards are fixed two small bearings for supporting a shaft, provided with two arms forming a tilting or vibrating lever, and upon the end of the same shaft is a lever and weight. On the upper part of the framing is a wooden floor supporting the colour rollers. A movable cross piece and frame are fixed upon the printing table, which is of the same width internally as the stuff to be printed, the frame being fitted with grooves to take hold of and fixed to the cross piece by means of fly screws. The centre of the cross piece is fixed upon a vertical shaft, which passes through a transverse piece on the frame; the lower end of the vertical shaft rests in a socket fixed to a lever, the centre bearing on a pinion having four fusees. "The pressure given by the foot of the workman on the lever causes it to turn round the pivot and raise the fusee as well as the printing table. A point which is set into the fuse becomes disengaged from out of the grooves of the socket, and at the same time sets the whole of the levers connected therewith in motion, the counter-weight being drawn in the proper direction, the point passes through the wooden beam and is jointed to a spring which is stretched and united to the groove to which is attached a hoop which is thrust forward by a spring. The fusee carries the pinions to a barrel provided with 4 studs or pins, one of them being caught by a hook or catch the moment the pressure caused by the workmen ceases. The spring draws the groove with the hoop, and one of such rods draws the pinions conjointly with the fusee, and thus the table performs a rotative motion of a quarter of the circumference; then the point falls into the opposite groove and so on."

Another modification of the rotative motion of the printing table is described.

[Printed, 1s. Drawings.]

A.D. 1859, November 28.—No. 2694.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Messieurs Rénard, Frères.*)—"Improvements in the preparation of red colouring matters or dyes."

The invention consists in obtaining red colouring matters by heating to boiling point aniline, toluidine, cumidine, or xyldine, with one of the following salts, which should be used in a solid state or with a mixture of two or more of them : sulphates of tin, sulphates of mercury, bi-fluoride of tin, bi-fluoride of mercury, nitrate of uranium, nitrate of peroxide of iron, bi-chloride of titanium, bi-bromide (bi-bromure) of mercury, bi-bromide (bi-bromure) of tin, iodides of tin, chlorides of uranium, bromate of mercury. "The matter obtained is thinned down with boiling water when required for dyeing, and the goods are dyed in the solution in the ordinary manner. If a concentrated solution is sought, the matter is treated with alcohol, wood spirit, or acetic acid. The colour becomes fixed upon silk and wool without a mordant or with ordinary mordants, mineral acids excepted ; but for being fixed on cotton it is necessary that the cotton be first albuminized or prepared with the oily preparation used for dyeing it Turkey red."

[Printed, 4d. No Drawings.]

A.D. 1859, December 3.—No. 2746.

SMITH, CHARLES LAVERS. — (*A communication from Albert Schlumberger.*)—"Improvements in the preparation of certain colouring matters for dying, staining, and printing."

The invention relates to an improved mode of treating aniline, toluidine, cumidine, or substances obtained from coal-tar, oils, or other analogous substances for the purpose of producing a red colour, and consists in the use of iodine and its compounds for this purpose. To produce this red colour, aniline or salts of aniline, or any of the analogous substances, or the salts thereof, are heated with different proportions of metallic iodine, or iodine in combination with a metal, such as the bin-iodide of mercury. When metallic iodine is employed, the proportion is two parts of aniline to one of iodine. When the bin-iodide of mercury or iodine in combination with other substances is used, a larger proportion of the binary compound must be employed. The mixture of the aniline and iodine is then boiled in a glazed metallic digester until it passes through the various shades of brown and dull red, and attains a beautiful bright red colour. The colour is then thrown into hot water and boiled in different waters until

all, or nearly all, is dissolved. The solution is then filtered, and the filtrate allowed to cool, when the bulk of the colouring matter will be deposited. What remains in solution may be precipitated by the introduction of common salt or other neutral salt. "The precipitate thus obtained may be employed or redissolved in methylated spirits of wine for convenience of use, or the watery solutions first mentioned may be employed partially evaporated or otherwise for the purposes of dyeing, straining, or printing."

[Printed, 4d. No Drawings.]

A.D. 1859, December 6.—No. 2760.

JONES, JAMES, and HILTON, JOHN.—"Improvements in apparatus to be used in dyeing, dunging, soaping, and clearing fabrics."

Instead of employing for this purpose a vat furnished with a reel and uniting the ends of the fabric so as to draw them through the dye and then disuniting the ends and removing the fabric from the vat, an apparatus is employed by this invention which stops all the pieces of fabric under operation in a convenient position for being disuniting. "For this purpose we employ a cross rail and board or plate with open slots at one edge. These slots must be sufficiently wide to allow the fabric to pass freely, except at the part where the two ends are united. When it is desirable to remove the pieces of fabric from the vat the board or plate is applied and each piece of fabric is introduced into one of the slots. The reel is allowed to revolve until each joining of the ends of the fabric has been stopped by the slot board. The reel is then stopped and the attendant can then disconnect the ends with facility as they are all in contact with the slot board. thereby considerably economizing labour."

[Printed, 8d. Drawing.]

A.D. 1859, December 7.—No. 2777.

PATTISON, ROBERT THOMSON.—(*Provisional protection only.*)—"Improvements in printing and dyeing certain woven fabrics and yarns."

1½ lbs. of lactarine (a preparation of milk described in No. 12,316, A.D. 1848), is dissolved in 6 pints (imperial) of water by the action of 1 lb. weight of carbonate of soda crystals

mixed therewith. "The solution thus obtained I print on the fabric which, when dried, I expose to the action of steam in the usual manner. I then take the fabrics as thus prepared and agitate or winch them in a preparation of milk of lime in its caustic state at a suitable temperature and at a strength of about 6° Twaddell for a period of about ten minutes." "I then wash the fabrics as thoroughly as practicable in order to get rid of the superfluous lime, and thereafter subject the same to the process of dyeing in the usual manner practised by calico printers or dyers with the requisite preparations of orchil, cochineal, picric, or other analogous colouring matters intended to be used."

In treating yarns, the process is varied to this extent, "that yarns may either be printed with the solution obtained by dissolving lactarine by means of carbonate of soda in crystals or be simply saturated with that solution."

[Printed, 4d. No Drawings.]

A.D. 1859, December 9.—No. 2792.

BOALER, WILLIAM.—"A compound for washing purposes."

This invention consists in manufacturing and vending a mixture composed of the borates of soda, potash, or lime, with salts of ammonia, and of the preparation of borate of ammonia to be used with soap for detergent purposes, either combined with this latter in a solid state, or added to a solution of the soap before or during the washing process. Borate of ammonia, it is stated, can be substituted for the borates mentioned and salts of ammonia, but no process is given for "the preparation of borate of ammonia."

[Printed, 4d. No Drawings.]

A.D. 1859, December 9.—No. 2796.

HUGHES, HESKETH, and MOORE, JOHN.—(*Provisional protection only.*)—"Improvements in machinery for transferring, and for transferring and engraving designs and figures on to cylindrical and flat surfaces."

The invention consists of apparatus for engraving direct, or for making out on a reduced scale any given design. It is described with reference to engraving a copper cylinder. The cylinder is placed in bearings in the frame of the machine

with the axis projecting on both sides. A dividing plate connected to one of two side levers is affixed to the axis on one side. Another side lever is connected to the axis on the opposite end of the cylinder and the two side levers are united by a cross bar in which there is a slot extending from one side lever to the other. The up-and-down motion of these levers causes the roller to move round, the position of the surface to be acted on being determined by an adjusting screw in the dividing plate. In front of the roller and fixed to a slide capable of motion across the machine is the cutting tool, the edge or point of which is set to cut more or less deeply into the cylinder. In the upper part of this transverse slide is a vertical slot. Jointed to a bar extending from a rod across the machine, and parallel to the axis of the cylinder, is the tracing lever. This rod is supported at its ends upon pivots; the joint by which the tracing lever is connected to the bar is in front of the slot in the traversing slide. The tracing lever is passed first through this slot, then through the slot in the horizontal cross bar, its point extending to the bed bottom or back part of the machine on which the design to be engraved is placed. The cutting tool travels in a direction to-and-fro across the roller according to the motion imparted to it by the tracing lever pushing the transverse slide, whilst the roller partakes of the up-and-down or semi-rotary motion.

[Printed, 4d. No Drawings.]

A.D. 1859, December 10.—No. 2800.

HEILMAN, RUDOLPH.—(*A communication from Jean Gerber Keller.*)—(*Letters Patent void for want of Final Specification.*)

—"The preparation of a new colour, called azaleine, and its application to dyeing and printing."

The process is as follows:—"Take the commercial article known by the name of aniline, or the salts formed by that body with the oxyacids and the organic acids. Treat it while under the influence of heat in suitable proportions with any of the salts, acids, and oxides named hereafter. The salts can be used in the crystallized state or dissolved."
 1. The salts formed by the nitrogen oxyacids (such as nitric acid, hyponitric acid, and nitrous acids), and metallic oxides. 2. The salts formed by the oxyacids of sulphur, such as sulphuric, hyposulphuric, and sulphurous, and the

“ metallic oxides. 3. The salts formed by the oxyacids of chlorine, bromine, and iodine, such as perchloric, chloric, iodic, bromic, and the metallic oxides. 4. The salts formed by the oxyacids of phosphorous and the metallic oxides. 5. The salts formed by the oxyacids of arsenic and the metallic oxides. 6. The salts formed by the oxyacids of chrome and the metallic oxides. 7. The metallic oxides alone or combined with one of the above-mentioned acids or an organic acid. The following acids—manganic, permanganic, ferric, plumbic, antimonious, antimonious alone or in combination with bases. The colour is applied to tissues and fibres in the usual ways well known to dyers and calico-printers in their trades.”

[Printed, 4d. No Drawings.]

A.D. 1859, December 10.—No. 2801.

CALVERT, FREDERICK GRACE, and LOWE, CHARLES.—(*Provisional protection only*).—“ Improvements in dyeing and printing certain yarns and fabrics.”

The invention consists in “ improvements for fixing on yarns and fabrics the peculiar class of colours derived from tar products and archil colours, known as French purples. We apply to the yarns and fabrics intended to be dyed or printed a mordant consisting of tanning matter with alumina, tin, or other metallic compound) by preference employing the tanning matter of gall nuts, and the preparation known as oxymuriate of tin), by which we fix the colours derived from tar products and archil colours, known as French purples, which colours have hitherto been fixed by albumen, lacterine, and other azotized substances of a similar nature.”

[Printed, 4d. No Drawings.]

A.D. 1859, December 14.—No. 2841.

LAWSON, RAMSEY.—(*Provisional protection only*).—“ Improvements in machinery or apparatus for punching patterns or devices upon metallic printing rollers or cylinders.”

1st. Arrangement designed to obviate the inconvenience arising from the cylinder being caused to revolve before the punch is removed, and thus becoming scratched. Two or

more levers are used in connection with the pitcher lever, the arrangement of which, in passing over and under their centres, gives a sufficient "dwell" to the cylinders to allow the punch to be clearly lifted from the surface of the roller before it revolves for a new impression.

2nd. Novel application of brake, whereby the punch is firmly retained upon the surface of the roller during the action of the hammer on it.

3rd. Peculiar catch for the purpose of adjusting the cylinder before it receives a fresh impression from the punch.

4th. Novel employment of a rod or bar supplied with sliding stops for the purpose of acting upon a stud attached to the carriage, such bar or rod being in connection with a lever, which stops or reverses the carriage according to the pattern required.

5th. Lever (attached to the front or hammer shaft) sliding or being worked against a quadrant fixed to the framing, the quadrant being supplied with movable studs. The studs and lever, when worked by hand, always allow the coupling catches for lifting the hammer to enter the adjustable cross-head attached to the uprights sufficiently to allow of the uncoupling or release of such hammer.

6th. The employment of a ring containing a step or split boss being tightened up or brought into closer contact by a set screw, thereby taking all back lash or unevenness from the pitcher lever.

7th. Peculiar arrangement of machinery for driving and working the machine, consisting in placing the working gear for driving the metallic roller at one end of the mandril, thereby allowing the other end free for dorfing or replacing a fresh roller for impressions.

[Printed, 4d. No Drawings.]

A.D. 1859, December 14.—No. 2845.

WATSON, WILLIAM.—"An improvement in preparing indigo for dyeing and other purposes."

The invention consists in forming a solution of indigo in sulphuric acid, and after diluting the solution with water, adding a salt or earth having the property of forming an insoluble compound with sulphuric acid, "for which purpose I

“ prefer the carbonate of barytes, by which the free sulphuric
“ acid, or so much thereof as will unite with and decompose
“ the salt of barytes, forms an insoluble compound. I then
“ separate the sulphate of barytes by subsidence or filtration,
“ and I prefer that the solution be kept hot during the ad-
“ dition of the carbonate of barytes, and during such sub-
“ sidence or filtration, the sulphate of barytes being separated,
“ the solution is allowed to cool, and an extract or compound
“ of indigo is deposited on cooling, which may then be re-
“ duced to a dry state by evaporation or other convenient
“ mode.” “The liquid from which the extract or compound
“ has been deposited still contains a portion of the compound
“ of indigo, which may be separated by evaporation or pre-
“ cipitated by the addition of chloride of barium or other salt,
“ or may be used in succeeding operations.”

[Printed, 4d. No Drawings.]

A.D. 1859, December 23.—No. 2934.

DE ARRIETA, JOSÉ JOAQUIN and LAMAR, JEAN PIERRE.—
(*A communication from Daniel Henry Guillaume.*)—(*Provisional
protection only.*)—“Improvements in bleaching, cleansing, and
“ decolorizing, and in apparatus employed therein.”

The invention consists in causing steam to come into direct
actual and immediate contact with the matters under treat-
ment, in addition to the use of chemical agents or reagents.
The vessel in which the fabrics are placed has water at the
bottom to receive impurities resulting from, and to regulate
the steam, the latter being introduced through a serpentine
worm or coil passing up into the receiver through the water
at the bottom, and finding an exit through minute orifices in
such worm. In order to give space for the circulation of the
steam, the material is placed upon uprights or bars arranged
in pairs, and forming a sort of flue or channel. The bars may
be fixtures or inserted through orifices in a false bottom and
withdrawn after introducing the fabric, leaving the required
spaces or channels for the steam; or the matters may be
arranged on perforated discs or shelves, or may be wound
upon beams or rollers revolving or not, and hollow for the
admission of steam.

[Printed, 4d. No Drawings.]

A.D. 1859, December 24.—No. 2939.

HUBER, EMILE.—(*Provisional protection only.*)—"The preparation of certain colouring substances for printing and dyeing, or other purposes."

The invention consists "in the transformation of naphthaline into nitro-naphthaline, naphthylamine, and salts or compounds, of naphthylamine and the transformation into colouring matters of the naphthylamine and salts or compounds of naphthylamine by oxidising and other agents, and the modification and alteration of such colouring matters by means of reagents, and the application of the same for printing, dyeing, or otherwise colouring silk, wool, cotton, skins, feathers, and other articles, either with or without mordants."

[Printed, 4d. No Drawings.]

A.D. 1859, December 28.—No. 2962.

ROSTAING, CHARLES SYLVESTER.—"Improvements in combining and mixing gutta percha with mineral and vegetable substances capable of altering its quality in such a manner as to produce hard, resistant, unalterable, and impure compounds diversely coloured."

One of the uses of these compounds is to make cylinders for printers.

In these improvements colours may be used that are "prepared on the principle laid down in" No. 3060, A.D. 1856. A method of obtaining a colour is described, in which oxide of zinc is the basis, which may or may not be combined with other metallic salts. The zinc oxide or combination of salts is mixed with water and exposed "to a white red heat" in a crucible for several hours; the baked oxide, after cooling is pulverized, dried and sieved.

Eight operations are used to prepare the compositions:—

1st. Freeing the gutta percha from matters soluble in boiling water, dividing it by a flattening engine, boiling the sheets in soap wort, washing and drying them. 2nd. Completely purifying the gutta percha by freeing it from oily parts soluble in alkalies. 3rd. The preparation of "artificial silicate of zinc" by mixing a paste that contains zinc oxide, zinc chloride, and silica, and baking bricks made of the compound; the bricks are then ground to an impalpable powder.

4th. A similar composition is made of silicate of alumina and zinc. 5th. A compound containing silicate of magnesia. 6th. A combination containing native sulphuret of zinc. 7th. A combination of tannin, gutta percha, chloroform, benzoin, and essential oil. 8th. A compound containing gutta percha and catechu.

A rotary mixing machine is described and shown in which "ellipsoidal" rotate round a tubular axis or steam pipe.

[Printed, 1s. 4d. Drawings.]

A.D. 1859, December 28.—No. 2963.

GILBEE, WILLIAM ARMAND.—(*A communication from Felix Charvin.*)—"Manufacture of colouring matter for replacing "Lokas or Chinese green."

The new colouring matter is extracted from the bark of the *Rhamnus Catharticus* (or *Nerprun Purgatif*.) The process is as follows:—The bark having been rapidly removed from the branches (by preference from those which are old and the bark of which is of the deepest red colour) is then thrown into water previously boiled in the proportion of 25 grammes (16 dwts. troy) of bark to 1 litre (about 1½ pints) of water; the liquid is then boiled for a quarter of an hour, and the whole poured into a vessel which is afterwards covered over. The bark is left to digest during one or two nights according to the temperature, and at the expiration of this time it is removed, and about a quarter of a tumbler full of lime water per litre is added to the liquor. The liquor is then exposed in plates to oxidize, and in about six hours assumes a blue green colour. The liquor in each plate is poured into a porcelain saucer, which is placed over a vessel containing boiling water, and the colouring matter is dried over a sand bath. The colour may be obtained in a pure state by being precipitated, by potash, being first dissolved in water and afterwards decanted and filtered.

[Printed, 4d. No Drawings.]

A.D. 1859, December 29.—No. 2970.

NEWTON, ALFRED VINCENT.—(*A communication from Charles de Jongh.*)—"Improvements in the mode of and apparatus for "submitting yarns or threads to the action of gaseous and "liquid bodies."

The object of this invention is to submit lengths of thread, while in motion, to the action of liquid bodies for the purpose of dyeing or drying the same, and preparing them for spinning or weaving. This is effected by winding the threads round drums or reels in the form of a helix, or one coil of thread beside the other, a space being left between each coil. These drums or reels have a continuous rotary motion, and deliver out of the machine or apparatus as much thread at one end of the helix as they take up at the other end. By this arrangement any length of thread can be collected and submitted to the action of the operating agents long enough to ensure the perfect action of such agents. "These agents may be either air, heated or not, if the object be to dry the threads; baths of mordants or dye stuffs, if the object be to dye the threads;" "or any other agent or agents proper to obtain the desired effect."

[Printed, 10d. Drawing.]

1860.

A.D. 1860, January 5.—No. 34.

FISHER, JOHN.—"Improvements in machinery or apparatus for washing, cleansing, or purifying clothes and other articles."

These improvements are, "the use or employment of atmospheric air or other gas" for the above purposes, and for "bleaching or otherwise treating" clothes, &c., and "the construction and mode of working" of the apparatus as follows:—"Combining with a tub or other suitable vessel for containing the articles to be treated, a blowing apparatus for forcing the air or gas into the tub or vessel containing the goods, "whether soap ley, plain or acidulated water, or other liquor be employed." The blowing apparatus is connected with the tub or vessel by small tubes. The "blowing machine may either be a pair of double-action bellows, or any other apparatus of simple construction," worked by a lever or handle with the hand. For washing, &c. goods on

a large scale it "may be worked by steam or other power instead of the hand."

[Printed, 8d. Drawing.]

A.D. 1860, January 11.—No. 68.

BOLTON, ALFRED SOHIER, and BOLTON, FRANCIS SEDDON.
—(*Letters Patent void for want of Final Specification.*)—"An improvement or improvements in the manufacture of hollow cylinders of copper or alloys of copper, which said cylinders may be used for rollers for printing fabrics and for such other purposes as the same are or may be applicable to."

"We take a hollow cylinder of copper or alloy of copper, the said cylinder being much smaller in diameter and thicker in substance than it is intended the finished cylinder shall be. After having turned the exterior and bored the interior of the said cylinder we heat it to redness, and while hot hammer and press it so as to flatten it. When nearly flattened we coat the interior with a layer of sand, or other powdered solid not affected by heat, or with a mixture of such substance with water or other liquid; we then complete the flattening process. Having again heated it we pass it between a pair of plain or flat rolls. The flattened cylinder is passed between the rolls according to the method of rolling called 'cross rolling,' that is, the axis of the flattened cylinder is parallel with the axis of the rolls. The rolling process is repeated until the width of the flattened cylinder is such that when opened again into a cylindrical form it will have the required diameter. After the completion of the rolling process the cylinder is opened, and the fins or burrs formed at the places where the metal was doubled are removed."

[Printed, 4d. No Drawings.]

A.D. 1860, January 12.—No. 86.

CARTER, GEORGE.—(*Provisional protection only.*)—"Improvements in the means and apparatus for boiling and mixing size, colour, or any other matters or substances requiring such treatment."

Constructing "suitable shaped vessels for containing the liquor or other matter to be operated on, having steam chests or chambers or pipes supported or fixed within for heating with pipes for discharging the condensed water." These vessels have in their interior "agitators traversing and oscillating," moved "by a crank or other suitable means. The mixture is drawn off by pipes or a suitable pump adapted to the vicinity of the matters under treatment."

[Printed, 4d. No Drawings.]

A.D. 1860, January 13.—No. 96.

GODDARD, JOSEPH.—"Improvements in the preparation and dyeing of yarns and threads."

The invention is intended to impart additional lustre to such yarns as are known as "doubled yarns" intended to be dyed black, and consists in boiling the yarns (generally in the hank) in plain water, and afterwards steeping them in a solution of catechu (commonly known as "cutch," "scutch," or "gambia,") and sulphate of copper for about eight hours. They are then passed through lime-water, afterwards through a solution of sulphate of iron, then through lime-water again, and next through a decoction of logwood and fustic, to which is added a solution of sulphate of iron. After the yarns have passed through it they are passed through the mixture of logwood, fustic, and sulphate of iron, then through lime-water again, and through a solution of logwood and fustic, and through the mixture as before, and finally, through a solution of soap and water. They are then dried and, "if required, polished and finished as usual."

A.D. 1860, January 17.—No. 118.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Benjamin Paraf-Javal.*)—"Improvements in extracting substances from cereal grains and some of their products, and the application of the substances extracted."

The invention consists of a mode by which the gluten can be dissolved alone by the employment of weak agents which do not require to be concentrated. The skin of the wheat having been separated by filtration or otherwise, the starch with part of the vegetable fibrin becomes deposited, and by

drawing off the supernatant liquor the gluten may be obtained in solution with the vegetable fibrin floating in it. If allowed to remain at rest, the whole of the fibrin becomes deposited. The separation may be more quickly effected by the use of a centrifugal filtering machine. Or the separation may be made by precipitating the gluten from the solution, by which means all the vegetable fibrin is carried down, and a precipitate obtained, which is very similar to gluten. The solutions may be made, 1st, of acid waters resulting from the washing of starch: 2nd, of most organic acids; 3rd, of most mineral acids; 4th, of most of the soluble oxides; 5th, of most kinds of salts. It is made by submitting to the action of one of the above agents the substances which contain gluten.

The precipitation of the gluten is effected by the neutralization of the solution, if it is alkaline or neuter, by the addition of certain acids, even if the liquor is acid; by the addition of a number of salts, alkaline, neutral, or acid; by the introduction of substances capable of forming insoluble combinations with gluten, such as tannin, &c.

Gluten thus prepared is employed for fixing colours on fabrics, &c. As it can be rendered insoluble, the substances to which it is applied are rendered incombustible, and at the same time are not injured by washing.

[Printed, *ad.* No Drawings.]

A.D. 1860, January 18.—No. 126.

MEDLOCK, HENRY.—“Improvements in the preparation of
“red and purple dyes.”

“I mix aniline with dry arsenic acid and allow the mixture
“to stand for some time, or I accelerate the operation by
“heating it to or near to its boiling point until it assumes a
“rich purple colour, and I then mix it with boiling water
“and allow the mixture to cool, when cold it is filtered or
“decanted.” In solution is a red colouring matter or dye and
a tarry substance is on the filter which “dissolved in alcohol,
“mithylated spirit, or other suitable spirit furnishes a purple
“dye.” “The mixture of aniline and arsenic acid after
“being heated may be allowed to cool and then forms a paste
“which may be preserved; when required for use it is mixed
“with boiling water and treated as above described.” “Two
“parts by weight of aniline to one part by weight of arsenic

“ acid yields a good result, but I do not confine myself to that proportion as it admits of variation.”

[Printed, 4d. No Drawings.]

A.D. 1860, January 24.—No. 176.

HUGHES, EDWARD JOSEPH.—(*A communication from Paul Depouilly and Charles Lauth.*)—“ Improvements in the manufacture of certain colouring matters by the oxidation of salts of aniline and other salts of a similar nature.”

The inventor mixes “ for distillation aniline with nitric acid in the proportion of 200 parts of aniline and 65 parts of nitric acid, specific gravity 1.360. The mixture is heated on a sand bath, or by other means, from 300° to 400° Fahrenheit. Part of the aniline, which distils over with the water of the nitric acid, may be used again in future operations. After all the water has been distilled the product is kept in a state of ebullition for about an hour. It becomes a thick syrup of a dark red colour. It is then put into a suitable vessel, a small quantity of water added and neutralized with a solution of carbonate of soda, afterwards well washed with water until the water appears colourless or slightly red. The product is then dried by heat to remove the remaining water. The product thus washed and dried is fit for the trade. It contains, however, besides the red coloring matter a resin of a brownish violet colour, to remove which I adopt the following method:—Boil 20 parts of pure water, and add while boiling 1 part of the product, and continue to heat until the whole of the resin is removed from the surface by skimming; the solution is then filtered through a layer of sand, and on cooling deposits a green paste with a metallic reflection. The water is drawn off and may be used again in the next operation. The red colouring matter left may be used in the above state, or in a solution of acetic acid, alcohol, or any other suitable solvent.”

[Printed, 4d. No Drawings.]

A.D. 1860, January 25.—No. 184.

NICHOLSON, EDWARD CHAMBERS.—(*Provisional protection only.*)—“ Improvements in the production of colours for dyeing and printing.”

The invention consists in the employment of arsenic acid in conjunction with aniline, toluidine, cumidine, or mixtures of the same, for the production of colours. "I take a strong solution of arsenic acid, to which I add aniline, toluidine, cumidine, or mixtures of the same. I then heat the mixture in a still or other convenient vessel until the colour is sufficiently developed. The coloured product of the contents of the still may be then extracted either directly by boiling the same in water, or by dissolving it in a suitable quantity of alcohol. From these solutions the colouring matter may be prepared for use by any convenient and well-known methods."

[Printed, 4d. No Drawings.]

A.D. 1860, January 28.—No. 224.

NICHOLSON, EDWARD CHAMBERS.—(*Provisional protection only.*)—"Improvements in the production of colours for dyeing and printing."

The invention consists in the employment of nitric acid in conjunction with the substances mentioned in No. 184, A.D. 1860. "I take nitric acid, to which I add aniline, toluidine, cumidine, or mixture of the same. I then heat the mixtures in a still or other convenient vessel until the colour is sufficiently developed. The coloured product (the contents of the still) may be then extracted, either directly by boiling the same in water, or by dissolving it in a suitable quantity of alcohol. From these solutions the colouring matter may be prepared for use by any convenient and well-known methods."

[Printed, 4d. No Drawings.]

A.D. 1860, February 7.—No. 324.

BREITTMAYER, AIMÉ LOUIS EUGÈNE.—"Improvements in machinery for and in engraving the metallic surfaces of printing rollers or cylinders."

Referring to No. 2414 of 1857 the inventor states:—"Now, one part of my invention consists in arranging machinery similar to that above described in such manner that two or more tools may be worked at the same time from one pattern cylinder; two or more printing rollers or cylinders may thus be engraved at the same time from one pattern

" cylinder, or the same pattern may be repeated two or more times along the length for one or more cylinders." For this purpose each tool is actuated by a separate electro-magnet and the point pressing against the surface of the pattern cylinder is connected with a wire to which one end of the coil of wire of each magnet is connected. The other end of the coil of each magnet is connected to a wire leading from one pole of a battery, and the pattern cylinder is, as before, put in communication with a wire leading from the other pole of the battery. By this means, when the point pressing against the surface of the pattern cylinder is in contact with the metallic surface of the pattern cylinder, all the magnets will simultaneously draw away the cutting points from the surface of the cylinder, but when the point is in contact with a portion of the cylinder which is coated with varnish, the current will be broken, and all the points cut into the surface of the cylinder.

" Another part of the invention consists in arranging machinery similar to that above described in such manner that from two or more pattern cylinders, each having a different design upon it, two or more cylinders may be engraved, and the design engraved on each printing cylinder be repeated two or more times along its length." For this purpose a separate cutting tool is employed for every repetition of each design, and each cutting tool is actuated by a separate electro-magnet. Against the circumference of each pattern cylinder a separate point is made to press, and each of these points has connected to it a wire, and each wire is in communication with one end of each of the coils of wire of the electro-magnets for actuating the cutting tools acting on the circumference of one printing cylinder. The other ends of the coils of wire of the electro-magnets are connected to a wire coming from one pole of a battery, the wire from the other pole of the battery being in communication with each of the pattern cylinders. By this means, when the pattern cylinders and the cylinders to be engraved are caused to rotate, and the points pressing on their circumferences moved in the direction of their length, each cylinder will have engraved on it two or more times along its length the pattern on the pattern cylinder. In place of causing the cutting tools to cut into the cylinders the depth required for printing,

" I first coat the cylinder with varnish, and then by the cutting tools remove the varnish where the cylinder is to be engraved, and also a portion of the metallic surface of the cylinder. The cylinder is then placed horizontally in a bath of acid and water, in which there is also a plate of the same metal as the cylinder. The cylinder is then put in communication with one pole of a battery, and the metal plate with the other pole, by which means the engraving will be bitten in."

[Printed, 10d. Drawings.]

A.D. 1860, February 22.—No. 475.

SCHIELE, CHRISTIAN.—"Improvements in machinery for hammering, crushing, reducing, cutting, and mixing."

The machinery described in the Specification is applicable (among other uses) to making chips from logwood. It consists of a large boss or centre plate fixed on a revolving shaft. On this are linked, so as to swing freely, a convenient number of arms, at the end of each of which is mounted a forge hammer, a cutting hammer, or a roller, as required for the purposes above stated. On rapid motion being given to the shaft, the arms are thrown out to a radial position by means of the centrifugal force imparted, and the hammers are thus made to fall upon an anvil on which is the material to be operated upon. For the purpose of further crushing, reducing, and mixing materials operated upon as above described, properly shaped hammers are allowed to strike against or roll along the inner surface of a strong trough-shaped ring, made of such a size that the hammers, &c., cannot completely swing out to a radial position, but produce, as they rapidly revolve, a pounding, rolling, and mixing of the material within the trough.

[Printed, 8d. Drawings.]

A.D. 1860, February 24.—No. 499.

MUCKLOW, EDWARD.—"Improvements in the treatment of madder roots, munjeet, or other plants of a similar class."

The invention consists in submitting these substances to the following cleansing process preparatory to grinding them. The madder roots are steeped in cold water, pure or slightly impregnated with any neutral salt, or earthy or other matters

not having the properties of dissolving or acting as a solvent upon the colouring principle contained in the roots; or they may be saturated and treated in various ways by pressure and vacuum, the object being to effect the thorough saturation of the roots, which takes, "according to the means used and " quality of the roots, from one to 6 hours. In countries " where the roots are grown, the saturation may be un- " necessary, the roots are to be taken and subjected to severe " hydraulic or other pressure, by which means the saccharine " matter impurities and other organic substances are expelled " in the state of solubility and the pressure increased and " repeated as often as found necessary."

[Printed, 4d. No Drawings.]

A.D. 1860, February 25.—No. 513.

LIGHTFOOT, JOHN.—"Improvements in fixing pigments and " other colouring matters on textile fabrics and yarns."

The invention consists:—1st, in steaming goods printed in " glue colours," and afterwards fixing in a "mercurial salt " solution," or subacetate of lead solution; 2nd, in the use of glue as a thickening and fixing substance for murexide or murexan; 3rd, in the fixing of pigments or other colouring matters by making the colour with glue and nitrate of lead, fixing in ammonia and a salt of mercury; 4th, making colours with glue incapable of gelatinizing when cold, by the introduction of neutral salts of alkaline or other metals: 5th, the use of tannin or "tanno-gelatine" as a mordant for the class of colouring matters derived from aniline or similar artificial colouring matters made from basic substances of a similar nature.

[Printed, 4d. No Drawings.]

A.D. 1860, February 25.—No. 530.

FONROBERT, CHARLES FRANÇOIS JULES.—(*A communication from Mrs. Müller.*)—"Improvements in gilding and silvering " silk and other fibrous substances."

Gold or silver leaf is ground "on a slab with a muller or " otherwise, mixing it with gum water or other viscid liquid " until it is reduced to a very fine or impalpable powder. " This is washed with pure water to remove the gum, as in " the ordinary process of preparing gold and silver in fine

“ powder for painting. The silk, thread, or other fibrous substance is then prepared by soaking or boiling in a solution of chloride of zinc, and it is then washed in water, and again boiled in water in which the aforesaid gold or silver powder is diffused. It is then again washed in water and dried, and will be found to be covered with a coating of gold or silver. Lustre may be given to it by the ordinary processes of polishing.”

[Printed, 4d. No Drawings.]

A.D. 1860, March 5.—No. 599.

SMITH, RICHARD.—(*Provisional protection only.*)—“ Improve-
ments in the preparation and production of colouring
matter.”

To a saturated solution of aniline, toluidine, xylydine, or cumidine in water is added a saturated solution of chlorine in water. The greater the proportion of the chlorine the more the colour inclines to red. A precipitate obtained from this mixture by adding an alkali in solution is filtered, washed with water, and carefully dried at 100° Centigrade; or it may be digested with methylated spirits of wine for twenty-four hours and then evaporated. The precipitate in either case must then be digested or boiled in mineral naphtha until this has taken up everything soluble therein. The part left undissolved is the desired colouring matter, and when solid is of a bronze colour, something similar to but redder than that obtained from aniline by means of chromates. It is then dried at 100° Centigrade to evaporate the naphtha, and afterwards digested in methylated spirits of wine to obtain a saturated solution thereof, when it is fit for the dyer's or printer's use. In dyeing with it, an alcoholic solution of this colouring matter is added to boiling water, and the silk, wool, cotton and other fabric immersed therein. For printing, a solution of the required strength is thickened with albumen, gum, or starch, in the usual way.

[Printed, 4d. No Drawings.]

A.D. 1860, March 9.—No. 639.

RICHARDS, WILLIAM. — (*Provisional protection only.*) —
“ Cleansing, rinsing, or scouring lace, hosiery, or other

“ articles, whether made of silk, cotton, or other material, from extraneous matter.”

The inventor states, “my invention consists in the use or employment of liquid or liquids to what is called a hydro-extractor by means of a cistern erected over it, the bottom of which is perforated, thus allowing the liquid to fall freely upon the goods to be cleansed or rinsed. I also propose to convey the liquid by means of a hose or pipe composed of leather or other suitable material, which is also perforated, and is connected to the same cistern, by which means much friction is obviated, and the beauty or perfection of the goods preserved. By these means the most delicate fabrics, such as mechlins or Brussels lace, can be cleansed or rinsed without their texture being in anywise injured, and moreover a considerable amount of labour is saved.”

“In scouring goods I use another cistern, which is also elevated above the hydro-extractor, to which is connected a pipe to convey the liquids from it into the cistern or hose already connected to the hydro-extractor.”

“The ordinary hydro-extractor has a flange extending over the cylinder, but in this my invention I dispense with the use of the flange, in order to permit the liquid to have its full action upon the goods. I also propose to have the edge of the cylinder of a convex shape, so that any liquids falling thereon may pass into the cylinder.”

[Printed, 4d. No Drawings.]

A.D. 1860, March 16.—No. 695.

WHITE, GEORGE. —(*A communication from Johann Georg Leuchs.*)—“Applying as a substitute for the animal albumen hitherto obtained from bird’s eggs or blood, certain parts of reptiles, fish, mollusca, and articulated or radiated animals.”

The invention consists, in the use for the purpose (among others) of calico printing, of the animal albumen contained in the roes, spawns, eggs, or other albuminous parts of fish, frogs, or other cold-blooded or amphibious salt or fresh-water animals. The fleshy part of the roes, &c., having been cleared away, the remainder is reduced by trituration and crushing to a sort of albuminous pulp, which is then strained and pressed, after which the supernatant, clear, or liquid part is

drawn off from the sediment. "The albumen thus obtained may then be made use of in that state, or the same may be evaporated partly or entirely brought to dryness."

No detailed process of using the albumen for calico printing is set forth.

[Printed, 4d. No Drawings.]

A.D. 1860, March 20.—No. 726.

SHAND, ALEXANDER.—(*A communication from Charles Shand.*)
—"Improvements in preparing or bleaching coir, fibre, and coir yarns."

The invention consists in subjecting these substances in a moistened state to the action of sulphurous acid gas.

[Printed, 4d. No Drawings.]

A.D. 1860, March 21.—No. 736.

MACDONALD, WILLIAM STEVENSON. — "Improvements in dyeing or printing woven fabrics of mixed materials."

The invention refers to those fabrics which require two operations, one for cotton the other for wool, and consists in thickening the dyeing or colouring materials, or their bases or mordants, either for the first or second dye, with flour, starch, gum, &c., and then applying the same "by means of blocks, padding, blotching, or engraved roller or rollers, or plates, or cleaning doctors, or other suitable surface or surfaces of that character. The colours so applied I then raise and fix or dry the same as in the case of mineral or spirit colours; or dry and steam as in the case of steam colours; or simply dry, as in the case of topical or pigment colours; all of which different treatments will be well understood by all persons conversant with dyeing and printing."

[Printed, 4d. No Drawings.]

A.D. 1860, March 24.—No. 766.

DALE, JOHN.—"Improvements in the preparation of a colouring matter for dyeing textile materials and fabrics, and other substances."

The invention refers to the preparation of a colouring matter from barwood, camwood, red wood, and other such woods, and consists in treating these woods with alkaline

solutions in such a manner, as not to destroy their dyeing qualities. "The principle upon which my invention is founded
 "I assume to be this: The colouring principle of the above
 "woods is a definite substance capable of combining chemi-
 "cally with alkalis in certain proportions, and when so
 "combined is deprived in that state of its dyeing power, but
 "if submitted to an excess of alkali, is permanently injured.
 "I therefore treat these woods with definite strengths of
 "alkaline solutions, by which I get extracts of a red colour in
 "contradistinction to those hitherto obtained, which have
 "been purple, and so as to obtain an extract without excess
 "of alkali, and I subsequently precipitate the colouring
 "matter by sulphuric acid or other suitable substance, this
 "precipitate being placed in a bath, will be found to afford
 "the required dye, or the materials to be dyed may be placed
 "in a bath of the alkaline extract and sulphuric acid added."

[Printed, 4d. No Drawings.]

A.D. 1860, March 24.—No. 773.

JOHNSON, JOHN HENRY. — (*A communication from L. et E. Boilley, Frères.*) — "Improvements in the production of
 "colours for dyeing or printing."

The invention relates to the production, from indigo, of what the inventor calls a "purple blue," and consists:—1st, in employing bisulphate of soda or bisulphate of potash for the purpose of attacking and dissolving the indigo; 2nd, in employing other acids, as, for instance, anhydrous phosphoric acid added to sulphuric acid; 3rd, in subjecting powdered indigo to the vapour of three times its weight of anhydrous sulphuric acid; and, 4th, in subjecting the indigo to the action of chloride of potassium in combination with anhydrous sulphuric acid. "The purple blue may likewise be obtained
 "by the hydrated bisulphate in place of the anhydrous
 "bisulphate."

[Printed, 4d. No Drawings.]

A.D. 1860, March 29.—No. 814.

DALE, JOHN. — (*Provisional protection only.*) — "Improvements
 "in obtaining albumen or analogous substances for use with
 "pigments in calico printing and for other purposes."

The invention consists in procuring albuminous matter from the roe of fish. "This substance I obtain by the simple process of dissolving it out from the roe, and the solution I evaporate in vacuo to avoid coagulation; or the albumen, when dissolved out, may be precipitated and subsequently liquified in any suitable solvent."

[Printed, 4d. No Drawings.]

A.D. 1860, April 19.—No. 985.

DALE, JOHN, and CARO, HEINRICH.—(*A communication from Auguste Leonhardt.*)—"Improvements in dyeing cotton yarns or threads and fabrics."

The invention consists in treating the yarns, &c., with a solution containing the necessary mordants and the colouring matter combined, and subsequently with a substance which will precipitate the necessary material for constituting the dye. "The former of these may be kept fit for use by the addition of gums or analogous organic materials and acids. The solution for the second treatment will necessarily be varied to suit the first and the colour to be produced, and in this we employ alkalis or alkaline salts alone, or with oxidizing materials." Two different preparations are used. "The colouring principles of logwood, fustic, bark, catechu, sapan wood, or shumach, either by themselves or as mixtures of two or more of them are dissolved in a suitable quantity of water together with metallic salts or mordants, as salts of iron, alumina, tin, copper, &c., either alone or as mixtures of two or more of them, and we keep these mixtures of colouring matter and metallic salts in solution, or in a state fit for dyeing by combining them with gums, gum substitutes, sugar, or analogous organic matters, together with mineral or organic acids, and this constitutes our first operation." The goods may for this operation be placed in an ordinary padding machine. The second preparation consists "of a solution of free alkali, as caustic, soda, potash, ammonia or lime, or alkaline carbonates, phosphates, arseniates, acetates, tartrates, silicates, stannates, aluminates, together when required (as in producing blacks) with oxidizing agents, as neutral or acid chromates of the alkalis."

[Printed, 4d. No Drawings.]

A.D. 1860, April 23.—No. 1010.

PHILIPPE, JULES ALPHONSE.—“A new process and apparatus for bleaching fabrics and substances that can be bleached, such as thread, textile plants, and paper pulp.”

The essential part of the invention consists in exposing alternately the cloth material or substance to the action of the boiling lye, and that of the discolouring dry steam without displacement or removal, thereby reducing the time occupied in bleaching them from a week or more to about 24 hours. The operations are five in number. The first lasts for six hours, during which the fabric revolves 55 minutes every hour in the lye, and for five minutes is exposed to the action of dry steam. The lye bath is made with 1000 quarts of soft water, 10 lbs. of soft soap, 25 quarts of clarified lime-water, and 12 to 20 lbs. of carbonate of soda boiled together for half an hour. By the second operation the fabric is rinsed in clear water, after which it is immersed in a bath of chlorodine or hydrochloric acid, acidulated water, in which it remains two hours. In the third, the fabric is again rinsed and put in a bath of very weak chloride of lime, in which it is kept about six hours. In the fourth, the fabric is rinsed and placed again in the acidulated bath of the second operation, in which it remains about 10 minutes only. The fifth and last operation consists in taking the fabric from this bath and putting it into one prepared with soft soap and well clarified bran water, sufficiently heated and left for about five minutes to expel the smell of the chlorine; after which the fabric is rinsed in clear water and the bleaching is complete.

[Printed, 10d. Drawing.]

A.D. 1860, April 23. No. 1014.

BIRKBECK, GEORGE HENRY.—(*A communication from Leon Malzard and Edouard Leopold Dulac.*)—“Improvements in machinery or apparatus for printing woven or other fabrics or tissues.”

The invention consists of apparatus by which shawl pieces or continuous pieces of woven fabric or paper may be printed in one or more colours. A carriage containing the printing rollers and colouring apparatus travels to and fro along a table, the framing of which is fitted with toothed racks. Motion is given to the printing rollers by toothed wheels on

their axes taking into the racks. Each printing roller receives its colour from an endless band passing over rollers mounted on the carriage, the band being lifted off the roller and the aperture of the colour trough being closed, and the roller itself cleaned by circular brushes during the return movement of the carriage. The axes of the rollers are pressed down by weighted levers. The table on which the fabric to be printed rests, is, by means of an eccentric and lever, made to sink during the return movement of the carriage. The fabric is fixed by gum or other adhesive matter to waxed cloth, which travels under the printing apparatus, a ratchet, or divided wheel and driver, being employed to give a regulated amount of movement to the frame after each printing, so as to bring a fresh surface under the apparatus. When paper hangings are printed by this apparatus the selvages are held down by pressing plates, and registering pins are employed to determine the amount of movement after each printing.

[Printed, 1s. Drawing.]

A.D. 1860, April 25.—No. 1048.

HARTMANN, JULES ALBERT.—(*Provisional protection only.*)

—“The extraction of a certain coloring matter from rags and
“ other waste vegetable textile fabrics containing the same.”

The object of the invention is to obtain the colouring matter alizarine ($C_{20}H_6O_6$) from rags, &c., which have been dyed or printed with madder or other dyes in which alizarine is the colouring base or principle. “I first treat the rags or other
“ waste textile fabrics as aforesaid, with water slightly acidu-
“ lated, say with muriatic acid, in order to dissolve the
“ metallic oxide mordants. I then use saline solutions which
“ dissolve and separate the colouring matter; and I prefer for
“ this purpose a boiling solution of alum or alkaline solutions
“ subsequently decomposed by acids; or, I apply the acid and
“ saline solutions simultaneously. The rags are removed or
“ the solutions are drawn off or run out from the vessel con-
“ taining them, and I obtain the colouring matter by precipi-
“ tation or evaporation.”

[Printed, *ed.* No Drawings.]

A.D. 1860, May 11.—No. 1163.

RIDGE, SAMUEL.—“Improvements in the process of ageing
“ printed woven fabrics.”

The object of the invention is to economize the time occupied by this process. "The usual mode of ageing fabrics is to expose them for several days to the atmosphere. This necessarily involves a considerable outlay in buildings in which the fabrics are suspended, and a great loss of time. Now my invention consists in exposing the fabrics when printed to a current of air impregnated with moisture, by means of which the process of ageing is accomplished in a few minutes." The fabric, after leaving the printing machine, is taken over rollers surrounded by a casing, so as to expose a large surface of fabric to the action of the air which is forced or drawn through the casing and through perforated tubes in the casing. The air before entering the casing is impregnated with moisture by passing through a tube, the sides of which are perforated to admit steam. The air is caused to pass through a sponge or other absorbing substance to remove the excess of moisture.

[Printed, 6d. Drawing.]

A.D. 1860, May 16.—No. 1206.

COWPER, CHARLES.—(*A communication from Cyprien Marie Tessié du Motay*).—"The manufacture and application to fibres and fabrics of a new blue colour, and compounds of the same with other colours."

The colour produced by means of this invention does not vary in artificial or solar light. Moreover, by the addition of yellow dyes various tints of green may be obtained which have also the property of appearing the same by solar as by artificial light. It is composed by mixing in the proportion of their chemical equivalents soluble prussian blue and carmine of indigo. The latter is prepared by dissolving indigo in sulphuric acid, whereby sulph-indigotic acid is produced. The following is the mode of preparing the new blue:—5 lbs. of prussiate of potash are dissolved in 15 lbs. of water, and to this solution is added 2½ lbs. of per-sulphate of iron, which has been previously boiled with 1½ lbs. of oil of vitriol or sulphuric acid of commerce, and dissolved in 8 lbs. of water. A precipitate of prussian blue, insoluble in excess of the precipitant, is thus produced, and after being filtered and drained is soluble in pure water. A quantity of the carmine of indigo is well mixed with this soluble prussian blue in the proportion of one chemical

equivalent of each. The two blues combine to produce the Patent blue. This new blue dissolved in water forms a dye bath, and may be employed with gum water or other thickener for printing on fabrics or yarns. It does not require any special mordants. For dyeing silk the bath should be between 77° and 95° Fahrenheit, and for wool between 140° and 176°.

[Printed, 4d. No Drawings.]

A.D. 1860, May 19.—No. 1238.

NEWTON, WILLIAM EDWARD.—*A communication from Thomas Crossley.*—"Improvements in printing blocks for printing fibrous and textile fabrics."

The invention consists in the production of an electrotypes printing block having a plain face with margins of metal and the body of felt or its equivalent, and highly raised above its base, and having perpendicular sides. A mould corresponding with the design is set up in plain-faced rectangular types (wooden or metallic) of three or more different heights, the longest however forming what is called the face, or that which carries the colouring matter. The cast is then taken in wax, which, after being dusted with plumbago, is placed in a battery, and a thin facsimile of the matrix produced in copper or other metal. Into the back of this is run type or other suitable strengthening metal, and this is then fastened to a wooden block or back, and is ready to be printed with. The blocks are made in sections, and are arranged on a platten, so as to present a form of about 60 by 30 inches, "but they may be extended to two, three, or more yards in length, whilst with wooden blocks such a thing would be impracticable, owing to their unequal swelling, shrinking, and warping. A cylindrical form may be thus made up of sections prepared in the same manner as the flat blocks, and advantageously used in printing certain fabrics, which are now printed by engraved or embossed cylinders."

[Printed, 8d. Drawing.]

A.D. 1860, May 22.—No. 1253.

MOULTON, GEORGE. — "Improvements in machinery for transferring to or tracing upon printing rollers or cylinders copies of designs or patterns intended to be etched or engraved thereon."

The object of the invention is to combine in the same instruments or parts of the machinery facilities for enabling the diamonds or cutting points to operate over extended portions of the roller, with convenient means for accurately adjusting each diamond or cutting point in the precise position upon the carrying arm which it is required to occupy. It consists in so arranging the parts of the apparatus which carry the diamond points that each such point can be applied at any part of a considerable section of the roller by the use of a curved arm or bar for carrying the diamond bolt or holder, effecting at the same time the accurate adjustment of the diamond bolt or holder on the carrying arm or bar, by making the bolt adjustable by sliding along the curved carrying arm by the action of a screw (or rack and pinion) acting upon a pin or nut attached to or forming part of the said bolt or holder, and when adjusted retained in position by a clamping screw.

[Printed, 1s. 2d. Drawings.]

A.D. 1860, May 26.—No. 1300.

DE LAIRE, GEORGES, and GIRARD, CHARLES.—“A new process for manufacturing red and violet colouring matter.”

“Arsenic acid (12 parts) and water (12 parts) are put into a distilling apparatus, the arsenic acid having become completely hydrated. 10 parts of kyanol (the aniline of French chemists) are added, and the whole mixed together. By evaporating at from 248° to 320° Fahrenheit a perfectly homogeneous mass is obtained of a coppery hue similar to Florentine bronze. The mixture is highly soluble in water, imparting to it a fine pure red tint with no admixture of violet. Fabrics dyed with this substance retain no trace of arsenic. The colouring matter may also be freed from arsenic either by pulverizing the mass and digesting with either chlorhydric or sulphuric acid diluted with water, or by dissolving the colouring matter in water and digesting with a quantity of lime corresponding with the portion of arsenical compounds contained in it, the lime being slightly in excess. Sulphuretted hydrogen may be used for the same purpose.”

To obtain a violet colour, 24 parts arsenic acid, 24 parts water, and 10 parts kyanol (aniline) are taken. “The process

“ is precisely the same as for the red colouring matter herein-
“ before described and the whole of the kyanol (aniline) is
“ thus transformed into soluble colour, which is fit for directly
“ dyeing violet, pensée, and granate red, but when used for
“ silk stuffs ” “ should previously be purified. The purifying
“ process is easily performed by means of naphtha (benzine),
“ which separates the violet matter from the remainder.”

[Printed, 4d. No Drawings.]

A.D. 1860, May 26.—No. 1307.

DALE, JOHN, and CARO, HEINRICH. — “Improvements in
“ obtaining colouring matter for dyeing and printing.”

The invention consists in obtaining purple and red colouring matters from aniline. For the purple, salts of aniline are dissolved in water and mixed with solutions of perchloride of copper or with mixtures containing soluble salts of copper and alkaline chlorides, as chlorides of potassium, sodium, or ammonium. By heating these solutions to their boiling point, a black or dark purple precipitate is formed containing the colouring matter. Colours of a red shade are produced by treating aniline with an anhydrous metallic nitrate as nitrate of lead and anhydrous acids, such as anhydrous sulphuric, phosphoric, arsenic, antimoniac acids. The mixture soon assumes a yellow colour, which is ultimately converted into a dark red colour containing the red shades which are extracted by boiling water.

A red colour soluble in water is also obtained by treating aniline with nitrate of bismuth under heat.

[Printed, 4d. No Drawings.]

A.D. 1860, May 30.—No. 1333.

PICKSTONE, WILLIAM, and BACON, WILLIAM.—(*Provisional protection only*).—“Improvements in machinery for dyeing, “ washing, or sizing.”

The dye wash or sizing vessel, which is annular in form, is furnished with a steam jacket and fitted with perforated pipes for the purpose of washing the yarn, &c. In the centre of the space formed by the inner side of the annular vessel is an upright driving shaft or axis, which carries a frame also of an annular form. On this frame are a series of pairs of rollers,

arranged radially across the annular vessel, on which rollers the skeins, hanks, or fabrics are placed or wound round. The rollers with the yarns attached are hung in the revolving frame, and in such manner as to keep the yarns, &c., in a perpendicular position. "Provision is made for giving motion
 " to the series of rollers so that the materials may at pleasure
 " uniformly or with definite alterations, be acted upon by the
 " fluids used in the dyeing, washing, or sizing processes. The
 " frame and machinery are so arranged and constructed that
 " when the dye and wash liquors and fluids have been run
 " from the vessel, the yarns, threads, or fabrics carried by the
 " rollers may, without being removed from the vessel, be
 " freed from moisture by centrifugal action caused by a quick
 " rotation of the frame."

[Printed, 4d. No Drawings.]

A.D. 1860, June 9.—No. 1421.

MATLEY, RICHARD. —(*Provisional protection only.*) — "Improvements in machinery or apparatus for printing woven fabrics."

The invention relates to a particular class of woven fabrics, which have patterns or designs printed upon both surfaces, and consists in arranging two "bed rollers" or cylinders in a vertical position one above the other, and furnishing each with two or more printing cylinders or rollers, but upon opposite sides, so that as the fabric passes vertically through the machine from bottom to top, or *vice versa*, it is printed on one side by the lower printing rollers, and as it passes round the upper bed, cylinder, or roller, the opposite surface becomes exposed to the upper set of printing rollers, and the pattern is thus imprinted on both sides. "In order that the
 " surface of the fabric may not come into direct contact with
 " the bed rollers, two 'grey cloths' or other coarse fabrics
 " are passed with the fabric to be printed over the two bed
 " rollers to form a slight covering, not passing through the
 " machine but returning after pressing over each cylinder."

[Printed, 4d. No Drawings.]

A.D. 1860, June 11.—No. 1426.

CALVERT, FREDERICK CRACE, LOWE, CHARLES, and CLIFT, SAMUEL. — "Improvements in the manufacture of colouring matters."

The invention consists:—1st, in the production of “emeraldine,” a green insoluble colouring matter from aniline or its analogues, such as toluidine, xyloidine, cumidine, and their compounds, by oxidation, directly in contact with the yarn, fibre, tissue, or fabric required to be coloured, the yarn, &c., having been impregnated with a solution of chlorate of potash or other oxidizing agent. After padding or printing, the goods must be allowed to age for 12 hours, by which time the colour will be completely developed. Emeraldine is likewise produced by padding or printing the yarn, fibre, tissue, or fabric, with a solution of salt of aniline, toluidine, xyloidine, or cumidine.

2nd. To convert the green colour thus obtained into azurine of a blue or purple shade, the goods must be boiled in a weak alkaline or soap solution and dried.

[Printed, 4d. No Drawings.]

A.D. 1860, June 14.—No. 1454.

HENRY, MICHAEL.—(*A communication from Louis Henry Obert, Jean Baptiste Vasseur, and Auguste Houbigant.*)—“Improvements in treating vegetable substances so as to obtain paper pulp and other useful products therefrom.”

The invention consists:—1st, of a process by which vegetable substances are disintegrated, decolorized, and reduced to pulp, and the fibres or filaments, tanning, colouring, and other useful matters which they contain are extracted from them by the action of steam in a closed boiler, containing a bath of carbonates or salts of soda, potash, or lime; 2nd, in the distillation of vegetable substances by means of steam in a closed receiver, in order to disintegrate and decolorize them, and obtain paper pulp therefrom, heat being applied either directly by a generator or by steam admitted at a pressure of several atmospheres in a jacket or double casing, or by a mode termed a *bain marie*, the alcoholic and other products of distillation being received in vessels, graduated and arranged to collect them according to their various degrees of purity; 3rd, in subjecting the substances to “hot treatment,” *i.e.*, heat by means of steam under pressure in a closed boiler for the purpose of disintegration, decolorization, and conversion into paper pulp; 4th, in a combination of apparatus for performing the disintegration, “hot treatment,” decolorization, and

bleaching of the vegetable substances in order to operate thereon and convert them into pulp; 5th, in a mode of preliminarily crushing the substances by means of an arrangement of rollers, one pair over another, in such manner that the substances may pass down and between them together with a continuous stream of liquid, either clear or charged with matters, whereby they are caused to travel along and away more readily; 6th, in the employment in and for the steeping process, of the baths or liquors used for the hot treatment in the closed boiler, instead of alkaline salts, also the using over and over again of these baths or liquors for fresh operations of hot treatment in the closed boiler or receiver, until sufficiently concentrated; 7th, the mode of extracting from vegetable substances by one process paper pulp, colouring materials, and other useful products.

[Printed, 1s. Drawings.]

A.D. 1860, June 14.—No. 1456.

SPARKHALL, EDWARD.—(*Letters Patent void for want of Final Specification.*)—"Improvements in producing certain designs and patterns upon cloth or textile fabrics, in order to procure certain effects in garments made therefrom."

"I produce," "by weaving or otherwise, designs or patterns in lines, straight, curved, or zig-zag, running obliquely and opposite each other, so as to meet in a point at the middle of the 'piece'" "at an angle of 45° , or any other angle, thus producing in one and the same 'piece' a design or pattern, and its reversed duplicate." Or, instead of the whole pattern being in duplicate, "it may be produced in two companion pieces: one in which the lines or stripes shall run obliquely up or down to the right, and the other obliquely up or down to the left; in which case the tailor or worker will have to take care to make the garments up so as to produce the same effect as if the first-mentioned plan were adopted (viz., producing both sets of lines in one and the same piece). The intention being, that when waistcoats, cloaks, or other garments, whether for men or women, are made up, the lines of the pattern or design shall run inclining to or from each other, and so produce the desired ornamental effect, contrary to the usual method, which is to have the lines of the pattern all one way."

[Printed, 4d. No Drawings.]

A.D. 1860, June 16.—No. 1474.

WIDNELL, HENRY.—“Improvements in printing and steaming threads and yarns of worsted and other materials for carpets and other fabrics, and in the apparatus employed therein.”

1st. Instead of, as in Whytock's process, winding the threads round a cylinder divided into equal spaces and colouring them by means of rollers which produce straight lines of various colours across the cylinders, and the threads wound on them, long tables with flat surfaces are employed as follows:—On each side of the table is an elevated rack about $\frac{1}{2}$ in. above the level of the table, which racks have a nick or cut at about every $\frac{1}{2}$ in., according to the width of block used to guide the printer, so that several half inches of colour may be put into their exact places across the threads. Each block has at each end a small projection, which falls into the nick in the rack, and guides the block into its place. The colouring matter is applied by means of blocks long enough to reach across the table, and of a width of one, two, three or more half inches, so that when there is a more or less wide space to be printed with the same colour, it may be done by the application of as few blocks as may be, by which there will be much saving of time compared with the present system, where the rollers put on but one half-inch at a time.”

2nd. Pair of cylinders for the purpose of printing threads, &c., differing principally from those now employed by reason of a long axle being applied, which is supported in the middle, and has a cylinder placed on each end. By this arrangement the same pattern may be printed at the same time in two different sets of colours. To effect this, two colour boxes are attached to the same strap or cord, each box being charged with a different colour; both colour boxes will be moved simultaneously by the same motive power, and impart their colour to the yarns on their respective cylinders.”

3rd. Improved method of steaming threads of worsted or other material after printing. Instead of laying the above, when printed, in a tray placed on a bed of seeds or chopped straw, for the purpose of absorbing the refuse colour, they are laid on strips of glass, metal, slate or other suitable material, laid across a frame of wood or metal, and thus the refuse colour

falls into the bottom of the tray; or a separate tray may be used to receive the refuse colour that may exude from the yarn in steaming.

[Printed, 4d. No Drawings.]

A.D. 1860, June 23.—No. 1528.

DAWSON, DAVID.—(*Letters Patent void for want of Final Specification.*)—"Improvements in the dyeing of cotton wool " (or waste) black and brown."

After describing the then processes of dyeing "shumach way" and "chrome way," the inventor states, "my process " is founded upon the weak basic properties of sesquioxide of " iron and its liability to separate from its dilute solutions. " I steep the cotton wool in a solution of catechu, made " exactly as for the chrome black, then I work the cotton " through a cold dilute solution of sesquioxide of iron. By " this means I can get a perfect saturation of the organic " acids of the catechu with the sesquioxide of iron, which is a " far superior mordant to the sesquioxide of chromium for " black. I then destroy the superfluous salt of sesquioxide of " iron which always remains attached to the cotton when " removed from a solution of that salt by working the cotton " through a solution of lime. The cotton is then ready for " dyeing a full deep black with a decoction of logwood, or a " good red brown, with the colouring matters of sandalwood, " barwood, or camwood. This process may be used no matter " what the cotton wool may have been steeped in, whether " sumach, catechu, morablans, divi divi, or other substance " containing gallic or tannic acids. The process will also be " most advantageous for cotton skein dyeing."

Printed, 4d. No Drawings.]

A.D. 1860, July 2.—No. 1590.

HUGHES, EDWARD THOMAS.—(*A communication from Christophe Muratore.*)—(*Provisional protection only.*)—"Obtaining " colouring matter from the lentisc or mastic tree."

The leaves and berries of the tree are boiled in water and the liquor strained and precipitated with a solution of salts of iron (oxide or sulphate), by which I obtain a liquid of a deep blue colour which will give to fabrics immersed in it a good black dye, provided they are left in the solution whilst in a

state of effervescence until a reaction takes place. This substance is called in commerce "African campeachy wood." African campeachy wood will produce other colours than black "according as it is mixed with other salts or acids: for instance, if salts of iron are used to precipitate it, a deep blue colour will be the result, which will become black by contact with the air. If salts of tin are used, a yellowish colour will be produced; salts of lead, white; salts of mercury yellow, and so on."

[Printed 4d. No Drawings.]

A.D. 1860, July 5.—No. 1625.

SQUIRE, WILLIAM STEVENS.—(*Provisional protection only*).—"Improvements in the production of colours for dyeing and printing."

The invention consists in the employment of peroxide of mercury in a finely divided state, in conjunction with a neutral salt of aniline, toluidine, or cumidine. "I make an intimate mixture of a salt of aniline and peroxide of mercury, and I heat them together until effervescence takes place, and I continue the heat for some time until the action is complete. I then dissolve the dark red mass so obtained, in methylated spirit, and filter. This solution may be used for dyeing when diluted with hot water: but in order to purify the colouring matter more completely, I pour the alcoholic solution into water, and collect the colouring matter which precipitates, which may then be dissolved in alcohol, and diluted with hot water for dyeing purposes. When the salt of aniline is not easily fusible, I add the mixture of the peroxide of mercury and the salt of aniline to some easily fusible substance, such as paraffine oil or wax, and I heat the mixture until the action is complete: I then pour off the paraffine and dissolve the colouring matter in methylated spirit as before."

[Printed, 4d. No Drawings.]

A.D. 1860, July 16.—No. 1721.

THIÉBAUT, JOSEPH.—"Improvements in the ornamentation of textile fabrics."

The invention consists in printing suitable designs on muslin, net, silk, cloth, &c., in Dutch metal, flock, &c., through

the medium of size or cement composed of about 1 quart of soft copal, 4-pint of poppy oil, and 2 oz. of lard. These ingredients are melted together, and allowed to cool, after which zinc white and oil of dele are added to the mass in proportions varying with the quality and description of the fabric. The printed surfaces of the said fabrics are then exposed to the atmosphere until sufficiently dried for being smoothed or hot-pressed by means of irons or rollers; the fabrics thus printed and ornamented are adapted for being washed or cleaned without injury to the device or design.

[Printed, &c. No Drawings.]

A.D. 1860, July 18.—No. 1736.

PICKSLEY, JOHN, and SIMS, REUBEN.—(*Provisional protection only.*)—"Improvements in bone mills and logwood rasps."

Chilled or other suitable bearings are fixed in a substantial top frame or rasping lid to receive a cylinder shaft, cam shaft, and driving wheel shaft. The rasping cylinder receives motion by means of a pinion fixed on its own shaft, and taking into the driving wheel. Upon the driving wheel shaft is also a spur pinion, taking into the wheel upon the cam shaft, which serves to communicate the alternate motion to feed piston or pistons. For facilitating the removal of the knives or rasps from the cylinder, one or more spaces are formed in the cylinder to receive the knives and rasps and the fixing pieces for the same. These pieces have a "snug" or "snugs" upon their inside surface, and contiguous to them are snugs in or upon the cylinder. Each snug has a suitable hole to receive a key or cotter, and when the knives or rasps are placed in the cylinder, the fixing piece is secured by a key or cotter passed through these holes, the teeth of the rasps being raised above the surface of the cylinder. Immediately over the cylinder is a hopper, to receive the bone or other substance to be rasped, and the operation is then performed by rapid motion being communicated to the cylinder, and alternate motion given to the feed pistons by means of a cam and counterweight, the pistons serving to press the materials against the teeth whilst they are being rasped.

[Printed, &c. No Drawings.]

A.D. 1860, July 18.—No. 1742.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Lies Bodard.*)—"The treatment of gluten in order to manufacture a substance to be employed in printing fabrics, and other industrial uses, in substitution for albumen."

The new substance styled by the inventor Lucine, is a preparation of dry neutralized gluten, made as follows:—
"40 lbs. of fresh gluten are exposed to the air for a time sufficient to render it plastic. It is then freed from its acids by repeated washings, and spread in thin layers on vitreous or metallic surfaces. It is then dried at 100° Fahrenheit, and kept out of contact with the atmosphere. It will be found in the state of thin flakes, brilliant, translucent, and of a pale yellow colour. The dry gluten thus produced will be about 10 lbs. in weight."

Before using this product, it must be allowed to swell for some hours in water. "I skim off or otherwise remove the supernatant water work the 'stuff' with a spatula and wash it in several waters. From this treatment the gluten will absorb its weight of water. I then dilute it with an equal weight of a liquor, composed of one part of sucrate of lime and 4 parts of water (the sucrate of lime should be that prepared according to the formula of Gerhardt). The gluten is thus made fluid and homogeneous."

[Printed, 4d. No Drawings.]

A.D. 1860, July 18.—No. 1744.

JOHNSON, JOHN HENRY.—(*A communication from Louis Henry Obert.*)—"A new colouring matter, and the means for obtaining the same."

The new colouring matter is of a yellow tint, and is styled "panphiteic" acid. Substances coloured by it assumes shades of grey when subjected to a bath of a decoction of logwood, with or without an alkali. The greys are slightly changed by acids, but recover their tint when treated with alkalies, and are heightened in tint by the action of sulphuric acid and alkalies. The new acid is obtained by treating vegetable substances either in a divided state or a decoction or infusion of the same, with concentrated or diluted nitric acid, alone or in conjunction with other mineral acids, such as sulphuric or

hydrochloric acids. The substances which yield this colour are:—Leguminous plants, more particularly lucern, which contain a stiptic or astringent principle, and the decoction of which has no effect upon salts of iron; esparto, in which case, the yellow, by the addition of prussiate of potash, assumes a blue tint; male and female flowers of the alder, and generally all vegetables which contain a tannin capable of producing other than a blue colour when brought into contact with salts of iron, and which will produce a black colour when mixed with logwood and salts of iron.

[Printed, 4d. No Drawings.]

A.D. 1860, July 23.—No. 1778.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Jacques Michel Dulud.*)—"A method of, and machinery for, "goffering or impressing, colouring and gilding, or otherwise "covering with metal, leather and fabrics, and substances in "a sheet state."

The printing in relief is effected by passing the material to be treated between a pair of rollers, one of which is in metal, and has the desired pattern sunk or cut out, while the other is the counterpart, and is formed of pulp, gutta percha, caoutchouc, &c., with the pattern in relief. For printing in one colour, a distributing roller is placed in contact with the counterpart roller, and on motion being given to the latter, it becomes charged with colour from the distributing roller, which itself derives the colour from a colour roller, in contact with which it revolves. For several colours the inventor uses what he terms *cliché* rollers. They are of gutta percha, prepared in a similar manner to the counterpart roller, with only such parts as they are to colour preserved in relief. "Supposing two colours to be desired—red and green, for "instance—the first *cliché* roller will be supplied with red "colour from a distributing roller, and the second *cliché* "roller will be supplied simultaneously with the green roller, "and the colours will be supplied to the counterpart roller, "and so on for as many colours as may be desired." For gilding, or covering with other metal, the metal is in a state of powder, and first a roller is used for depositing over such parts as are to be coated with the powder a size or mucilage;

other rollers then follow, which take their supply from a trough filled with the powder to be used.

[Printed, 8d. Drawing.]

A.D. 1860, July 28.—No. 1832.

BROWN, HENRY, and HODGSON, BROOK.—(*Provisional protection only.*) — “Improvements in the manufacture of a “ certain cloth or fabric commonly called Utrecht velvet.”

“ Instead of dyeing Utrecht velvets in the piece after being “ woven, or dyeing the warp, which forms the pile surface, “ previous to being woven, I dye the fibrous substance of “ which such warps are to be made in the state called sliver, “ slubbing, or rover, that is before it is spun into yarn, by “ which every fibre becomes thoroughly saturated with the “ colouring matter and produces a brilliant effect in the “ fabric.”

[Printed, 4d. No Drawings.]

A.D. 1860, August 2.—No. 1870.

MOREL, AUGUSTE VICTOR.—(*Provisional protection only.*)— “ An improved apparatus for printing in colours textile “ fabrics and other substances.”

This apparatus consists of a central drum within hollow cylinders, and furnished with arms or projections on its surface. On the rotation of the drum the projections come in contact with and force out rods connected with or carrying the printing blocks or surfaces. The blocks are forced against rollers carrying the colours, which are arranged round and at a small distance from the outer cylinder. The drum carries round the printing surfaces, which after receiving their supply of colour, print the material which is supported upon a table or printing cylinder over which the material is drawn. After being printed, the material passes over a series of hollow rollers, heated by steam or otherwise, for the purpose of drying, on to a receiving roll.

[Printed, 4d. No Drawings.]

A.D. 1860, August 8.—No. 1913.

WEBSTER, JAMES.—“ Improvements in the manufacture of “ prussiate of potash and prussian blue.”

BL.

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The invention consists:—1st. In causing oxide of iron or iron in any other state to enter into combination with bark, wood, or sawdust, or spent bark (*i.e.*, such as has been used by tanners). After the iron has been taken up by the bark, wood, &c., by moisture being applied, the whole is dried and burned in retorts or other apparatus, and when cold “is saturated with carbonate of potash, in the usual way of “manufacturing.” 2nd. In the use of sulphate of ammonia with lime, for making and supplying ammoniacal gas to the carbonized bark, or wood, &c., whilst in a hot state, and charged with the iron and potash, the prepared bark, wood, &c., being at the time confined in the said retorts.

[Printed, 6d. Drawing.]

A.D. 1860, August 11.—No. 1945.

SMITH, RICHARD.—“Improvements in the manufacture of “colouring matters for dyeing and printing fabrics.”

A purple or mauve colour is produced by mixing a solution of sulphate or muriate of aniline, toluidine, xyloidine, or cumidine, or a mixture of any or all of them, more or less diluted with a solution of red prussiate of potash, more or less diluted. The mixture is boiled for 24 hours and allowed to settle. The precipitate is dried at 212° Fahrenheit, washed clean with mineral naphtha, dried again, and the colouring matter extracted with methylated spirits of wine.

A red colour is produced by heating the peroxide of iron, tin, or mercury, or one of the higher oxides of antimony with muriate of aniline, toluidine, xyloidine, or cumidine, or a mixture of all or any of them in a dry state, or by heating sulphate of aniline, toluidine, xyloidine, or cumidine, or a mixture of any or of all of them in a dry state, with oxide of copper or peroxide of iron; also by boiling aniline, toluidine, xyloidine, or cumidine, or a mixture of any or of all of them, in their uncombined state with dry chloride of antimony.

To obtain the red colours in a dry state, chloride of calcium is dissolved in the aqueous solution, whereby the largest part of the colouring matter is precipitated or the spiritous solution is evaporated to dryness.

[Printed, 4d. No Drawings.]

A.D. 1860, August 15.—No. 1973.

BARLOW, HENRY BERNOUILLI.—(*A communication from Messieurs Breslauer, Meyer, and Company.*)—(*Provisional protection only.*)—"Improvements in the manufacture or preparation of indigo."

The invention consists in the use of metals instead of salts in such manufacture. "In performing this invention various kinds of metals may be employed, but those at present found most advantageous are metallic zinc, metallic iron, and metallic tin, the latter in particular possessing the required qualities and being easily recovered from the slime or sediment in the vat. In preparing the improved metallic indigo vat the metallic tin or other metal is mixed with lime and indigo. Water is then added, and before the vat is used the ingredients are allowed to stand sufficiently long for the reaction to take place."

[Printed, 4d. No Drawings.]

A.D. 1860, August 16.—No. 1988.

COLEMAN, JOSEPH JAMES.—"Improvements in the manufacture of colouring matters for dyeing and printing."

The invention relates to the manufacture of red and blue colouring matters from aniline or its analogues, such as toluidine, xylidine, and cumidine, and consists in treating these substances with compounds of bismuth, antimony, or arsenic. By heating together for some time, at about boiling point, a mixture of aniline or its analogues, with terchloride of antimony, a colouring matter is produced, which is bright red or purple according to the quantity of terchloride used. If perchloride be substituted for terchloride the colour produced will be blue or purple. Similar results are obtained by treating in a similar manner mixtures of aniline or its analogues with one or more of the following compounds: terchloride of bismuth, terchloride of arsenic, nitrate of bismuth, peroxide of bismuth, terbromide of arsenic, iodide of bismuth, iodide of arsenic. The red colour thus obtained may be dissolved out of the rough products by water or by spirit. The blue colouring matter being nearly insoluble in water, may be brought into solution by an alcoholic or acid menstruum.

[Printed, 4d. No Drawings.]

A.D. 1860, August 17.—No. 1990.

SMITH, RICHARD.—“Improvements in the preparation and
“ production of colouring matter.”

For a purple colour a saturated solution of aniline, toluidine, xylydine, and cumidine, or of any or either of them in water is added to a solution of chlorine in water about half the strength of a saturated solution. The proportions are from one to three equivalents of chlorine to one equivalent of the bases, the greater quantity of chlorine producing generally a redder shade of colour; “but I prefer to dissolve in the water used
“ for making the chlorine solution about 2 per cent. of sulphate of soda, and after being saturated with chlorine, it contains hyperchlorous acid, chloride of sodium, and bisulphate of soda; the first acts in a similar manner to free
“ chlorine, and the presence of the bisulphate enables me to
“ use leaden vessels for conducting the operations.” After being left standing for 12 hours the black precipitate formed is filtered and washed. It is then intimately mixed with a solution of caustic soda containing about 5 per cent. of soda; two hours afterwards it is again filtered, and the dark brown soda solution run off and washed with water until it runs off perfectly colourless. “The now partially purified precipitate
“ I boil in water until the colouring matter is dissolved, filter
“ hot, and add to the clear solution a small quantity of
“ chloride of calcium in order to separate the colouring
“ matter, which is collected on a filter, washed with cold
“ water until the water begins to assume a violet color, when
“ the now very pure coloring matter may be dried or dissolved
“ in methylated spirit, after which it may be used for dyeing
“ or printing in the same manner as those purple colors
“ obtained from aniline by means of chromates, manganates,
“ &c.”

[Printed, 4d. No Drawings.]

A.D. 1860, August 27.—No. 2067.

PIATON, CLAUDE LOUIS.—(*Provisional protection only.*)—“Ma-
“ chinery or apparatus for washing yarns and other textile
“ fabrics or materials in skeins.”

This apparatus consists “of two endless belts formed of
“ plates joined together, placed one over the other, and made

“ to travel in opposite directions over a trough containing the
“ washing liquid, and furnished with the appliances hereafter
“ named; weighted curved stretching levers are pivoted to
“ the plates of the upper chain, and carry a loose roller round
“ which the skein is passed; it also passes round another
“ roller, to which rotary motion is communicated by a toothed
“ pinion driven by the lower endless belt. The belts being
“ made to travel, the skeins are carried through the liquid
“ and are caused to revolve round the loose rollers on the ends
“ of the stretching levers and round the driven rollers. As
“ soon as each stretching lever reaches the end of the trough
“ it is raised by coming in contact with a guide, and following
“ the course of the belt to which it is connected falls and
“ releases the skein, which can be removed, and have its
“ place supplied by another, by an attendant. On entering
“ the trough at the opposite end each stretching lever falls
“ in the trough by its own weight, and the operations are
“ repeated as before.”

[Printed, &c. No Drawings.]

A.D. 1860, September 4.—No. 2134.

WHEELER, GEORGE PRINTY.—“ An improved mode of, and
“ apparatus for, preparing bleaching agents.”

The object of the invention is to effect an important economy in the manufacture of the bleaching agent known as oxymuriate of lime used in bleaching textile fabrics and vegetable fibres. A leaden retort is set in a closed water tank, and connected by a leaded pipe with a conical leaden receiver, which is closed at top and provided with a central vertical shaft carrying blades or arms for agitating the contents of the receiver. The retort has further a water joint to receive the lid, and a funnel fitted into the lid. A steam pipe is fitted to the water tank. The retort having been charged with a mixture of black oxide of manganese and common salt moistened with water and covered in the receiver, is next charged with well sifted slaked lime and an agitator set in action. Dilute sulphuric acid is then discharged into the retort through the funnel in such quantities as to make the generation of the gas in the retort slow and continuous. This gas finds its way by the coupling pipe to the receiver, and acts upon the lime therein contained and a shower of water discharged into the

receiver while the gas is thus acting. After some hours, when the generation of gas slackens, steam is turned into the water tank, and the chemical action of the materials therein is quickened. As soon as the gas ceases to go over, the contents of the receiver are discharged into a closed cistern and the lime allowed to precipitate. The clear liquor being then drawn off, it is ready for use as a bleaching agent.

[Printed, 8d. Drawing.]

A.D. 1860, September 6.—No. 2154.

NEWTON, WILLIAM EDWARD.—(*A communication from Jean Frédéric Beyerbach.*)—(*Provisional protection only.*)—"Improve-
" ments in the manufacture of archil."

The invention consists in blowing air or oxygen gas into an alkaline solution of the colouring matter of lichens. The decoction of the lichen in water containing a small quantity of caustic soda is filtered and evaporated to the density of about 9° Beaumé. A quantity of caustic ammonia is then added, and air or oxygen forced through the solution by means of perforated pipes, such pipes being supplied with stop-cocks for the purpose of regulating or cutting off the supply of air as required.

[Printed, 4d. No Drawings.]

A.D. 1860, September 11.—No. 2193.

CLAPHAM, ROBERT CALVERT.—"Improvements in the
" manufacture of bleaching powder, and apparatus employed
" therein."

The invention has for its object to obtain from common salt an increased yield of muriatic acid suitable for making bleaching powder. "In condensing muriatic acid from the decomposition of common salt, a large part of the muriatic acid has hitherto been found to be of too low a strength to be applicable to the decomposition of manganese in making bleaching powder, and the object of the present invention is to render the above-named weak acid, which usually varies in strength from 1° to 6° Twaddle, commercially useful for the above object." The weak acid solutions, as run from the last condenser in the muriatic acid apparatus, are cooled and passed down "what is called No. 1 condenser,

“ or the strong acid condenser, commonly used when de-
“ composing common salt in place of water.” The apparatus
employed “ resembles in principle that used in working Gay
“ Lussac’s apparatus for saving nitrate of soda.” It consists
of a series of cooling cisterns made of Caithness flags, secured
with suitable cement. From these a gutta percha pipe leads
the solutions to an egg-shaped vessel, made of metal or wood
and lined with india-rubber or gutta percha, or it may be made
of thick sheets of gutta percha only. This latter vessel is
attached to an ordinary air pump, by which the liquid con-
tents are forced through a gutta percha pipe or metal pipe
lined with india-rubber, to a cistern on the top of No. 1 con-
denser, “ whence a regular supply of the acid solutions can
“ be obtained as required by means well known to manu-
“ facturers.”

[Printed, 6d. Drawing.]

A.D. 1860, September 12.—No. 2205.

GRATRIX, ROBERT HODGSON, and PARAF-JAVAL, MATHIAS.
—“ Improvements in dyeing and printing textile materials and
“ fabrics.”

The invention relates to dyeing and printing with matters
derived from aniline, naphthaline, or analogous substances.
“ The principle we proceed upon is to prepare the article with
“ a material so that the colour shall be precipitated on the
“ said article; and we have found that this may be done by
“ passing it through gall liquor solution of catechu or other
“ substance of that group, or of compounds thereof. The
“ aniline colouring matter we extract with water. In prepar-
“ ing a colouring matter for printing, we dissolve rosin, and
“ precipitate the colouring matter with gall or other such
“ substance as aforesaid; this precipitate may then be used as
“ a printing material. We find also that the objects of our
“ invention may be attained by the use of what is commonly
“ known as the Turkey red preparation, which is a preparation
“ of oil, galls, and alum. Thus the oil solution may be used
“ alone, or the galls and oil mixed, or the oil, galls, and alum
“ in combination.”

[Printed, 4d. No Drawings.]

A.D. 1860, September 14.—No. 2219.

SCHEITHAUER, FERDINAND.—“An improved machine for
“printing calico and other fabrics.”

The invention relates to a machine “for printing calico,
“woollen, silk, or other woven piece goods, felts, or other
“fabrics, such for instance as paper and paper hangings.”
The main features of the machine consist in having the fabric
which is to receive the impressions from suitable printing
blocks, formed into an endless web, by fixing together both
ends of the fabric, and having this endless web stretched
lengthwise, and in the horizontal direction, over two drums
revolving in a strong longitudinal frame, the selvages of the
fabric being fixed to proper hooks forming part of the links of
two endless chains, encircling parts of the drums in order to
impart motion to them, and to the endless web, the printing
table or board being situated in the interior of the latter; while
the printing blocks are suspended in a carriage made to roll to
and fro on the top of the frame, for the purpose of bringing
the blocks alternately in contact with the colour chases or tubs
and afterwards with those parts of the fabric which are to
receive the impression.

[Printed, 10d. Drawing.]

A.D. 1860, September 20.—No. 2291.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from
Ignace Michel Firnstahl.*)—“Improvements in machinery for
“printing shawls and other fabrics.”

The object of the invention is to print shawls, &c., in two or
more colours by vertical pressure. The machine is composed
of a trestle or skeleton frame, a printing table, colour table,
and printing apparatus. The printing apparatus for four or
more colours is composed of a jointed chain, pinion for strap
or chain, double rails between which the chain is led, and
cams or other appliances for regulating the motion. On the
top of the frame rails are fixed, on which a carriage having
flanged wheels runs; this carriage supports two sets of levers
from which the printing blocks are suspended, vertical pressure
being applied to them by hand levers. “By depressing the
“hand lever from, say, the left side, the printing blocks to
“the right of the printing apparatus receive the same motion,

“ and while one part of the apparatus prints, the other part, as it ascends, moves on one side in such manner that colour is taken from the colour troughs and printing effected from “ two blocks working side by side.” The registering apparatus consists of a bracket depending from the sides of the travelling carriage, having a hole into which a bolt or catch takes. This bolt is connected to a weighted lever, and is thus made to act automatically. In the colour-taking apparatus, the colour roller has two toothed wheels, and the rollers rolling upon wheels spread the colour uniformly and are easy to work. The frames employed are similar to those in hand printing, except that they are flat and filled with liquid. Above, another frame is placed fitted with impermeable cloth, and over this another frame carrying tammy; in the angles of the latter are small cams to facilitate the rising of the rubbing roller, which rolls in the frame covered with the tammy, and returns on the rails placed at the same level as the frame.

[Printed, 1s. Drawing.]

A.D. 1860, September 27.—No. 2345.

MENNONS, MARC ANTOINE FRANÇOIS.—(*A communication from J. C. Guigon.*)—(*Provisional protection only.*)—“ Improved processes for dyeing or printing with certain products of aniline “ on cotton and other textile matters of vegetable origin.”

The invention consists in the application to these substances of the two derivatives of aniline known as “armaline” and “fuchsine.” The operations are as follows:—1st. The threads or tissues are boiled in clear lye, washed and dried; 2nd, passed to a bath of clear soda lye and olive oil and cow-dung and then dried; 3rd, repetition of 2nd operation; 4th, materials passed into a bath as in 2nd operation, but without the cow-dung, wrung, and dried; 5th, repetition of operation No. 4; 6th, repetition of the same; 7th, the tissues or threads are passed in parcels of the same weight (say about 1 lb.) through a soda lye, and being wrung are left on the table till the following day, when they are dried off as above; 8th, the operation No. 7 is repeated, a more concentrated lye being employed; 9th, the tissues or threads, on the completion of the preceding operation, are steeped for four hours in pure water slightly heated; they are then wrung and immediately dried off as before.

"The material thus prepared may be dyed with the fuchsine
 "from the most delicate rose tint to the richest purple; and
 "with the armaline, from the lightest to the deepest violet."
 In adding to these other dyed stuffs, such as a solution of
 Chinese green, indigo, a decoction of fustic wood, or one of
 the preparations of cochineal, "further variety of the richest
 "shades may be obtained."

[Printed, 4d. No Drawings.]

A.D. 1860, October 2.—No. 2376.

WHITTAM, ROBERT.—"Improvements in pentagraph ma-
 "chines used for engraving metal rollers or cylinders employed
 "in printing calicoes and other surfaces."

The object of the invention is to arrange these machines so
 that they may engrave designs upon steel or other metallic
 surfaces to be used as dies by engravers to calico-printers,
 and thus enable persons employing the penetagraph machine
 to engrave part of the design by mill, in the ordinary way,
 and the other part by pentagraph. One of the discs or pulleys
 which gives rotary motion to the copper roller is divided into
 two parts, forming two narrow discs at one end of the ma-
 chine. Upon these discs is placed the steel or other metal
 surface intended for the die, so that it may receive a similar
 motion in every respect to the motion given to the copper
 roller, and thereby enable a design to be formed on the steel
 surface similar to that on the roller.

[Printed, 1s. 2d. Drawings.]

A.D. 1860, October 4.—No. 2401.

COWPER, CHARLES.—(*A communication from Joseph Marie
 Albert Battalier.*)—"Improvements in the manufacture or
 "extraction and application of colouring matters from the
 "products of the distillation of coal tar."

The invention relates to the production of a red orange
 resinous matter insoluble in water, and in producing from the
 same yellow and brown acids soluble in water, and in the
 application of these substances and their compounds to dyeing
 and printing. A quantity of dry pitch resulting from the
 distillation of coal tar is placed in a clay retort, and heated
 until the retort is red-hot. A spongy carbon remains in the
 retort. The matter which distils over towards the end of the

operation and solidifies is the red orange matter. This resinous matter being treated for two hours with three or four times its weight of strong ordinary sulphuric acid or oil of vitriol produces a very soluble product. This is neutralized by carbonate of lime and filtered, and a solution of the salt of lime with the yellow acid is thus obtained. This solution, slightly acidulated, colours silk yellow in the cold, and colours wool yellow with the aid of heat, and also may be used for dyeing, printing, and staining other materials. The red orange resinous matter being treated for 24 hours in the cold, with fuming sulphuric acid, is dissolved. The product diluted with water, neutralized by carbonate of lime and filtered, gives a solution of the salt of lime of the brown acid. This solution slightly acidulated and heated colours silk, wool, and other substances of a red-brown colour.

[Printed, 4d. No Drawings.]

A.D. 1860, October 8.—No. 2432.

HUGHES, EDWARD JOSEPH. — (*A communication from Paul Depouilly, Ernest Depouilly, and Charles Lauth.*)—(*Provisional protection only.*)—"Improvements in the preparation of certain " colouring matters and also a process of printing and dyeing " woven fabrics, yarns, and other substances."

The invention consists:—1st. In precipitating, by means of tannin, solutions of violet and red derived from aniline and colouring matter derived from orchil. The precipitates thus obtained are insoluble in water. They serve alone or mixed with metallic oxides for painting, printing of paper, and woven fabrics, by means of albumen and other products used for fixing pigment colours. With the addition of a solvent, such as alcohol, methylene, acetic acid, &c., they may be used for dyeing. 2nd. In dyeing by means of the above product with or without the addition of a solvent, yarns or woven fabrics printed in mordant for madder dyeing, as mordants of iron, alumina, &c. 3rd. In dyeing the same mordants by fixing them first in a bath containing a tannic substance, washing and then drying them in a bath containing either the insoluble products above described, or violet and red of aniline used in the trade, or colours derived from orchil. 4th. In printing the colouring matters derived from aniline or from

orchil, with the addition of one of the mordants (as salts of alumina, of iron, &c.), then drying or vapourizing the stuffs and fixing them by a solution of tannin.

[Printed, 4d. No Drawings.]

A.D. 1860, October 11.—No. 2479.

HANON, ETIENNE JOSEPH. — “Improvements in the manufacture of vegetable albumine.”

These improvements are “converting gluten by fermentation into a substance useful in the arts and manufactures, and “which I call vegetable albumine or albumen.” Gluten, well washed with warm water, is placed in vessels in which it is left to ferment, in preference, at a temperature 20° to 30° F. above the temperature of the surrounding atmosphere. At this temperature 50 or 60 lbs. will be sufficiently advanced in 3 or 4 days and “the fermented gluten, or what I call vegetable albumine, will then be in the proper state for being “made into thin plates and dried.” Great care is taken “that the fermentation is stopped at the proper point, for if “it is allowed to proceed too far, the gluten is converted into “a noxious mass.” Among a number of uses to which this substance may be applied, are as a mordant and for fixing colours in printing fabrics.

[Printed, 4d. No Drawings.]

A.D. 1860, October 13.—No. 2492.

JOHNSON, JOHN HENRY. — (*A communication from Louis Joseph Troost.*)—(*Provisional protection only.*)—“Improvements “in the production of colours for dyeing and printing.”

The invention “relates to the production of colouring matter “from naphthaline, and consists in subjecting naphthaline to “the oxidizing action of nitric acid. The materials employed “are in about the proportion of one part by weight of naphthaline and two parts by weight of mono-hydrated nitric acid. The result of this reaction is a fluid mass which “speedily solidifies. The solid mass, having been pulverized, “is digested with alcohol, and to this solution is added an “alcoholic solution of sulphuret of sodium, or of sulphuretted sulphide of sodium, or an alcoholic solution of sulphuretted sulphide of potassium, or of sulphuret of potassium. On “mixing either of these solutions with the solution first

“ referred to, and raising the temperature to their boiling points, a violet colouring matter will be produced which may be separated from the resulting insoluble matter by filtration: the filtered solution containing the colouring matter may be employed for the various purposes of dyeing and printing.”

[Printed, 4d. No Drawings.]

A.D. 1860, October 19.—No. 2554.

MARSDEN, JAMES.—“ An improved method of bleaching and whitening fibres and fabrics of various kinds.”

“ First immerse the fibre or fabrics in a solution of chlorine until all the vegetable colour disappears; second, immerse the fibre or fabrics in a solution of hydrochloric acid until all animal or metallic colouring is destroyed; third, wash the fibre or fabrics thoroughly, using soap and soda in the usual manner; by these means and process the result is obtained, namely, the decolouring, bleaching, and perfect whitening of the coloured fibre, fabrics, garments, and rags, without injury to the materials of which they are composed.”

[Printed, 4d. No Drawings.]

A.D. 1860, October 23.—No. 2585.

BRAZLEY, GEORGE.—(*Provisional protection only*).—“ A new mode of preparing dyes produced from aniline.”

“ I take aniline, or its analogues, and combine with it any suitable re-agent or re-agents, according to the colour required to be produced, and treat them in the ordinary manner to form a paste: I then dissolve the paste in alcohol. This solution is allowed to settle, and the sediment of the re-agent or re-agents used in the preparation of the paste removed. Filtering, or other suitable paper, is then immersed in this solution, in which it is allowed to remain for a few minutes. The paper takes up or absorbs the dye, and when thoroughly saturated it is taken out and dried. Paper thus prepared may be sent into the market to be sold and used as ordinary dye, as the colouring matter in the paper is easily extracted by the application of hot water.”

[Printed, 4d. No Drawings.]

A.D. 1860, October 27.—No. 2623.

BURCH, JOSEPH, and BOOTH, EDWARD.—“Improvements
“in extracting colouring matters from vegetable, animal,
“and other substances, and making decoctions and infusions
“therefrom.”

The invention consists of apparatus fitted with separate compartments or vessels for containing the material from which the essence or colouring matter is to be extracted, and actuated by mechanical means, so as to keep up a constant dipping of such compartments or vessels into boiling or heated water or other liquids. The sides of the vessels or compartments are finely perforated, or partially made of wire gauze, thus making a kind of sieve through which the heated liquor runs on to the material when the vessels or compartments are submerged, and through which it drains out when the compartments are lifted above the surface of the boiling or heated liquid; the process being a constant alternate dipping and withdrawing of the compartments, and saturating and draining of the material, and by the action of the apparatus shifting and turning the material in the compartments until it has completely given out and parted with its essence or colouring matter. Three modifications of the invention are shown.

The invention also consists in the use of a press into which the spent material is thrown for the purpose of extracting, by pressure, all the remaining liquor that will drain therefrom.

[Printed, 1s. Drawings.]

A.D. 1860, October 27.—No. 2626.

SMEDLEY, THOMAS.—“Improvements in the manufacture of
“metal rollers and cylinders, used for calico printing and
“other purposes.”

The invention has for its object the prevention of “cold
“sets,” by which the interior of the casting is likely to be rendered defective. For this purpose, instead of being fixed in the mould “in the manner hitherto practised,” before the metal is poured in, in which case the metal adheres to the core during the process of pouring in the same, the core bar is inserted after the metal has been poured into the mould.

“ The ordinary mode of casting metal rollers and cylinders, under pressure, is by means of a powerful lever press, the upper part of which is moveable. The mould is formed in two pieces divided longitudinally, which are held together by means of wrought-iron hoops. The top and bottom ends of the mould are turned to fit the interior of it, similar to engine pistons. Now, I propose to fix the core part to the upper end, lowering them into the mould (after being filled with the molten metal) by means of the press, the upper end of the mould being attached to the top of the press, which, as before stated, is moveable, sliding up and down, as acted upon by the lever, but the mode of inserting the core bar may be varied.”

[Printed, 10d. Drawing.]

A.D. 1860, November 1.—No. 2671.

PRENTISS, E. FREEMAN.—“ Improvements in the combination of chemical materials for scouring, bleaching, and dyeing wool, cotton, silk, and other materials.”

1st. In place of using soda ash or carbonate of soda in the process of scouring and bleaching, the inventor uses a compound formed by grinding and mixing together 66 parts of soda ash with 48 parts of muriate of soda and 9 parts of silicate of soda.

2nd. Use of sulphate or chloride of manganese in the formation of a mordant. The mordant is prepared by boiling the sulphate or chloride of manganese as it comes from the retorts used in making chloride of lime, or by the use of quicklime when the mordant is required in its liquid and neutral state. To prepare the mordant of manganese in combination with other metallic bases, it is requisite to use the acid solution of chloride or sulphate of manganese as they come fresh and hot from the retorts, and then to immerse the required metal in this solution. A blue or dark shade of drab is given by the use of iron. Zinc gives black, blue, and some shades of drab; copper, a cutch brown, and so on. The above mordants can be used with the ordinary dyes, and in the manner similar to other known mordants.”

[Printed, 6d. No Drawings.]

A.D. 1860, November 5.—No. 2707.

PRENTISS, E. FREEMAN.—“Improvements in the combination
“of chemical materials forming a mordant for dyeing wool
“and woollen goods.”

The invention consists in combining the sulphates of iron, copper, and zinc for this purpose. The mordant is adapted for dyeing black and mulberry colour, such colour being fast and brilliant. The three sulphates are thus combined; iron 746 lbs., copper 254 lbs., and zinc 110 lbs. These are dissolved in water and then “reduced by evaporation to crystallization
“by any of the known ways.” The mode of using the mordant is as follows:—“For dyeing 100 lbs. weight of wool
“or woollen goods black. In water dissolve 7 lbs. of the
“mordant, $2\frac{1}{2}$ lbs. of red tartar, and boil the wool or woollen
“goods in the solution for two hours. Next day finish by
“boiling the woollen for $1\frac{1}{2}$ hours in an infusion made
“with 55 lbs. of logwood and 7 lbs. of fustic. After
“boiling add 2 buckets of urine, or in place thereof, use
“1 quart of ammonia (single F) then boil a quarter of an hour
“longer.”

[Printed, 4d. No Drawings.]

A.D. 1860, November 5.—No. 2708.

PRENTISS, ELIJAH FREEMAN.—“A new detergent.”

This detergent is “a solution of silicate of soda,” with or without a small quantity of “common soap,” depending upon the purpose for which it is used. To make the silicate, “soda ash free from salt,” and clean white sand in certain proportions, or “a mixture of sulphate of soda, charcoal, and
“white sand,” are ground together and fused for a number of hours. “The fused part is then removed, and immediately
“treated with cold water to soften it. It is then crushed
“between rollers and ground, then dissolved in hot water
“and evaporated down to a consistency of 30° Beaumé, and
“is then ready for use.” This is added to hot or cold water in different quantities, depending upon the nature of the fabrics, &c. to be cleansed.

[Printed, 4d. No Drawings.]

A.D. 1860, November 6.—No. 2729.

SMITH, THOMAS WONTNER.—“An improved process for obtaining pigments.”

The object of the invention is to operate upon the colours derived from aniline or other analogous products (obtained by the distillation of coal tar) in such a manner as to produce a precipitate or pigment capable of being used by paper-stainers and others. For this purpose a plastic compound of alumina, starch, and water is first prepared, and to this mixture is added “the liquid colour, as obtained in the market by any of the well-known processes used in preparing dyes from aniline.” The thorough combination of the colour and the plastic compound is effected by stirring the same well together, or passing the mixture through a grinding mill. When the compound has been thoroughly mixed, it is left to settle. A precipitate is thus obtained, which, after the excess of water has been removed by filtration, is suitable as a pigment for block printing.

[Printed, &c. No Drawings.]

A.D. 1860, November 10.—No. 2767.

GLEN, JOHN.—“Improvements in machinery, apparatus, or means for engraving or producing printed surfaces.”

The invention relates to copper or other rollers used for printing calicoes, &c., “so as to obtain by self-acting means the impression of the mill or impressing roller on the metal cylinder in the predetermined order or distance asunder. The overhanging arm which is jointed to and extends outwards from the laterally traversing carriage in which the mill or engraving roller is arranged, is connected by means of an adjustable screw link to a lower lever, which is supported by a double bracket, forming a portion of the front part of the carriage. Thus the carriage and pillar, with the overhanging arm, form a rectangular frame carrying the mill, to which an intermittent vertical motion is imparted, as well as the ordinary lateral traversing movement. The self-acting vertical motion of the mill is derived from a horizontal shaft arranged in front of the machine, and driven at one end by means of gearing actuated by the driving pulley. This shaft has fast to it a wheel which

“ gives motion to an excentric, supported in the outwardly extending bracket, and is arranged beneath the lower lever. “ The rotatory motion of the excentric alternately raises and “ depresses the mill. The necessary force on the downward “ motion of the mill to impress the copper cylinder is obtained by means of a weight or weights attached to the “ outer end of the lower lever.” An arrangement connected with the lift enables the elevation and descent of the mill to be adjusted to suit the size of the pattern to be engraved. The mill, when arranged in its supporting frame, has attached to one of its extremities a small rocking lever, to the free end of which a weighted string is attached. “ The moment the “ mill is raised from the cylinder the lever is drawn over by “ the counterweight, so that the mill is then brought by this “ partial rotation into the proper position for its descent on “ to the cylinder at the precise spot where the repeat of the “ design is required. This action of the mill is arranged so “ as to be reciprocal with the rotatory motion of the excentric, “ and not at the moment of the mill’s ascent.”

[Printed, 8d. Drawings.]

A.D. 1860, November 13.—No. 2785.

DEROIDE, ANDRÉ, and DUPOUY, VITAL.—(*Provisional protection only.*)—“ An improved method and apparatus for “ bleaching all descriptions of vegetable textile fabrics and “ yarns.”

In the interior of a large hermetically sealed box or chamber of wood, galvanized iron, &c., at some distance from the bottom, is a perforated false bottom. In the space between the two bottoms is coiled a metal pipe provided with slits or perforations, and communicating with a boiler, the steam of which is conducted by this pipe in the water or lye with which the space between the two bottoms is filled, so as to allow the steam to keep the water or lye in a state of ebullition. The fabrics or yarns to be bleached are suspended in the upper or open space of the box or chamber above the false bottom, so as to allow the steam evolved from the water or lye to come in contact with the entire surface of the fabrics or yarns. An overflow pipe opens just below the false bottom to keep the lye at the required level.

[Printed, 4d. No Drawings.]

A.D. 1860, November 14.—No. 2788.

WAITHMAN, ROBERT WILLIAM, and WAITHMAN, JOSEPH.—“Improvements in the manufacture of cords, twines, and similar articles, and in the machinery or apparatus employed therein.”

The invention relates, 1st, to machinery for spinning strands or yarns for cord, &c.; 2nd; to arrangements for finishing cords, &c., by passing the twisted materials through a machine, in which are combined the processes of dry and wet cleaning, bleaching, light colouring, dyeing or boiling, sizing, polishing, and drying. “To clean and polish or finish the cord or twine, we use friction rollers, revolving at great speed, or cards, brushes, and rubbers, either stationary, revolving, or having a to-and-fro motion imparted to them; or we use a box containing cards, horsehair, or other similar materials, the lid of which box is pressed down by means of a screw, lever, wedge, or spring. The water and size troughs may be heated by steam or in any suitable manner. The polished articles are guided to be dried in the open air, or into a chamber, heated or otherwise, stretching them over rollers.” “When the articles are sufficiently dried, they are, if necessary, carried through a cooling chamber, or over a box or vessel, and a spray or mist from cold water thrown upon them by revolving brushes having their bristles in contact with water; after which, if found desirable, the articles are again polished by any suitable means, applying tallow, soap, or wax as required, and then they are wound upon bobbins or reels, from which they are removed either as hanks for use or balled by hand or machine into suitable sized balls.”

[Printed, 1s. Drawings.]

A.D. 1860, November 14.—No. 2794.

GRATRIX, ROBERT HODGSON.—(*Partly a communication from Matthias Paraf.*)—“Improvements in obtaining colouring matters for dyeing and printing.”

The invention relates to “obtaining colouring matters from aniline and other bodies derived from coal tar and the alkaloids, and consists in the employment of all the oxy-

“ genated compounds of antimony capable of dehydrogenizing
 “ more or less oxyganic bodies. The azotized compounds of
 “ tin, nickel, aluminium, arsenic (other than the arsenic acid),
 “ cadmium, chromium, cobalt, copper, glucinum, manganese,
 “ molybdenum, osmium, tungsten, zinc. The chlorides,
 “ iodides, bromides, fluorides of all the non-metallic bodies,
 “ as well as the chlorides of arsenic, but not the chloride of
 “ carbon, oxygenated water, ozone in all its forms, all the
 “ compounds of azote and oxygen, the chromates other than
 “ that of potash, the manganates and permanganates other
 “ than those of potash, the ferrates, perchloric acid, the perchlo-
 “ rates, osmic acid, cupric acid, the oxygenated acids of iodine
 “ and bromine, that is all the compounds or bodies capable of
 “ dehydrogenizing organic bodies, cold or hot, anhydrous or
 “ hydrated, according to the manner desired.” Purple
 colouring matter is produced by mixing the aniline with
 commercial nitrate of copper, and a red colouring matter
 by mixing the same substance with the nitrate of antimonie
 acid.

[Printed, 4d. No Drawings.]

A.D. 1860, November 22.—No. 2859.

HENRY, JOHN.—“ Improvements in printing warps and in
 “ apparatus for the same.”

The invention consists in printing the warps by means of
 engraved cylinders. The warp is run off a freely running
 reel, passes through a reed, then over a blanket, on the surface
 of which it is printed. From this it passes on to a roller, on
 which it is wound preparatory to being placed in the loom to
 be woven. The printed warp is dried before being thus wound,
 either by means of heated cylinders or by being passed through
 a hot room. The printing cylinder is supplied with colour by
 an endless web, or apron passing over rollers, one of which
 keeps it in contact with the cylinder, while the other dips it
 in a colour trough provided with a doctor. Sometimes two
 printing cylinders are employed, one above, the other below,
 so as thoroughly to impregnate the threads of the warp with
 colour.

[Printed, 10d. Drawing.]

A.D. 1860, November 24.—No. 2881.

DALGLISH, ANDREW ADIE.—“Improvements in engraving
“ or for producing printed surfaces.”

The design photographed on glass, paper, &c., is transferred to the mill, roller, or plate by means of a varnish with which the surface of the mill is coated, the varnish being capable of resisting acids. The design is then etched in by means of an acid, or the ground of the design may be etched, and the design left in relief, or the design may be engraved or partially etched by acids and finished by engraving. For the printing of the design on the larger roller or plate the design on the roller or mill or plate may be filled with a varnish by means of which the design may be printed on the larger roller or plate. The latter is then immersed in an acid which etches or bites in the ordinary way. The process may also be carried out by coating the plate or other surface with gutta percha or other varnish, and afterwards with collodion, and then taking the picture direct in the camera. For transferring a design or picture to copper, steel, wood, or other material, the same process may be applied as for transferring the design to the mill or roller.

[Printed, 8d. Drawing.]

A.D. 1860, December 1.—No. 2956.

LEONHARDT, AUGUST.—“Improvements in the preparation
“ of indigo for dyeing and printing, and in obtaining pure or
“ refined indigo.”

The invention consists in treating the indigo with metals in a finely divided state, in the presence of an alkali or carbonate of an alkali or an alkaline earth. The metals may be obtained by precipitation, reduction from their oxides, by distillation, galvanic action, &c. “In order to prepare indigo for dyeing or printing, I take 30 lbs. of finely divided indigo of first quality, and mix it intimately with 10 gallons of water. I then take 9 lbs. of tin, prepared as above, and stir it well with 20 lbs. of caustic soda. The indigo is first boiled and the other ingredients added by degrees, after which the whole is boiled until it assumes the yellow colour which indicates that the indigo is completely reduced.”

[Printed, 4d. No Drawings.]

A.D. 1860, December 6.—No. 2993.

MELLODEW, THOMAS, KESSELMEYER, CHARLES WILLIAM, and WORRALL, JOHN MAYO. — "Improvements in the treatment of velvets, velveteens, and other fabrics, on which there are floated weft threads to be cut."

The invention relates to such velvets, &c., as have a face of silk, or of silk combined with other materials, and consists in dyeing or printing such fabrics previously to cutting the floated threads, and afterwards finishing them in the usual manner.

[Printed, 4d. No Drawings.]

A.D. 1860, December 7.—No. 2998.

HILL, CHARLES JOHN. — "Improvements in presses for stamping metals, embossing and cutting or punching out metal or paper, and printing on paper, linen, or any other material."

These improvements are, a strong metal frame to which is attached "a hollow vertical plunger, to contain or be connected with another plunger," in preference, acting inside the former, the top part of which is above the outer plunger, attached to and suspended by one or more springs. Above the said inner plunger are two levers working one fulcrum placed in a horizontal plane equidistant to centre of top of inner plunger; "that part of each of the levers which acts on the plunger is of circular form corresponding to the top of plunger, the blow being given at the time when the lever is at right angles with the plunger, whereby a direct blow is produced, so that on depressing either lever the blow is given, the other is raised and so on alternately; these levers are connected together by a double tee-bolt working in bearings, and are weighted at their extremities or power ends." When rapidity of action is not required dispensing with one of the levers and the couplings; it may then be termed a single direct-acting loaded lever press, or the levers may both be dispensed with, and the blow struck on the top of a thin solid plunger, either by weight or by hand, according to the force required, the springs remaining as before described.

[Printed, 8d. Drawing.]

A.D. 1860, December 11.—No. 3038.

TOWNSEND, JOSEPH, and WALKER, JAMES.—“Improve-
ments in treating bye products arising in the manufacture
of soda and potash, for the obtainment of antichlores, and
other useful products.”

This invention is referred to in No. 139, A.D. 1861.

It consists, 1, in producing hyposulphite and sulphite of lime from solutions of sulphide of calcium, obtained from the bye products arising in the manufacture of soda and potash, by causing such dissolved sulphide of calcium to become oxidised by means of atmospheric air; 2, in using hyposulphite and sulphite of lime together, with sulphate of soda, sulphate of potash, sulphate of ammonia, or sulphate of magnesia, or mixtures of such sulphates, for producing “precipitated antichlore;” 3, in using “precipitated antichlore” in the manufacture of paper; 4, in producing hyposulphites and sulphites of soda, potash, ammonia, or magnesia, or mixtures of such hyposulphites and sulphites, in solid form; 5, in producing sulphite of soda or potash by treating the insoluble portion of the oxidised waste with carbonate of, or caustic soda or potash; 6, in obtaining sulphur and oxides of manganese from solutions of sulphide of calcium, and solutions of chloride of manganese.

The hyposulphites and sulphites above-mentioned may be applied as antichlores “in the treatment of cotton or other fabrics, after bleaching with chlorine or with compounds of that substance;” they may also be applied “as bleaching agents for woollen or other animal fabrics.”

[Printed, 6d. No Drawings.]

A.D. 1860, December 19.—No. 3119.

HENRY, MICHAEL. — (*A communication from Bénédict Marie Alexandre Glénard and the Société Coignet, père, fils, et Cie.*)—(*Provisional protection only.*)—“Improvements in the manufacture of colours, applicable for various uses in arts and manufactures.”

The colours produced according to this invention, amongst other uses, are suitable for printing textile fabrics. They are produced by dyeing mineral and earthy matters, after subjecting them to “animalization” and “vegetalization,” that

is to say, by effecting "their intimate union, combination, or "molecule by molecule, with some animal or vegetable "substance capable of receiving dye." Various agents are employed for this purpose; for instance, the mineral substance may be pulverized and diluted in a solution of gelatine or animal or vegetable albumen, and brought into a paste which is dried, the mineral molecules being thereby encased in a sort of albuminous varnish. Bones intended to be dyed, previous to their manufacture into colours, are subjected to heat, or treated in a digester, in which they are submitted to the prolonged action of water at a high temperature. The inventor proposes "to apply the action of phosphate for the "purpose of precipitating colour, or as means of producing "adaptability for the taking of dye or colour."

[Printed, 4d. No Drawings.]

A.D. 1860, December 22.—No. 3150.

CLARK, WILLIAM.—(*A communication from Charles Emile Kopp.*)—"Improvements in the manufacture of colouring "matters."

The invention "consists of a new manner of treating tinctural "substances, especially madder, in order to obtain "therewith pure colouring extracts, pure dying baths, and "fine lakes." Madder roots, coarsely ground, are lixiviated with an aqueous solution of sulphurous acid or other compound having antifermenting properties. The solution has then added to it 3 per cent. of hydrochloric or sulphuric acids of commerce, is heated to about 140° Fahrenheit, when a red or yellowish brown colouring matter ("purpurine") is precipitated, and separated from the liquor by filtration. The clear filtered liquor, on being boiled, yields a new precipitate containing alezarine and altered chlorogerin. The green alezarine being separated by filtration, "the mother liquor "can be used for preparing garancine, garenceous or alcohol, "lactic acid, and other derivatives from sugar." Or the alezarine may be precipitated by saturating the hydrochloric acid with a small excess of milk of lime. The clear solution obtained by extracting madder with aqueous sulphurous acid can be used directly for preparing lakes or combinations of colouring matters with suitable oxides. The residue of madder

after lixiviation with sulphurous acid is washed several times with boiling water, and may then be used in dyeing as a kind of madder flower (*fleur de garance*). The same residue boiled with the acid liquors from the preparations of green alezarine is converted into a weak garancine.

[Printed, 4d. No Drawings.]

A.D. 1860, December 28.—No. 3179.

BINKS, CHRISTOPHER. — (*Provisional protection only*).—"Improvements in manufacturing certain gases applicable in generating heat and light and in bleaching."

The object of the invention is the economical manufacture of chlorine and oxygen; and, as regards chlorine, the decomposition of hydrochloric acid through the agency of oxygen gas mixed with or brought in contact with the hydrochloric acid under the conjoint action of a high temperature and the presence of substances capable of retaining or fixing the water formed by the reactions between the oxygen and the hydrogen of the hydrochloric acid, but not capable of retaining or fixing the chlorine liberated in its gaseous form. Oxygen is produced first by the decomposition of water "free or combined" or in its ordinary form, or in that of steam or of steam superheated or otherwise through the agency of chlorine mixed with or brought in contact with the water, or the steam under (preferably) the conjoint action of a high temperature and the presence of any substance or substances capable of retaining or of fixing, by combination or otherwise, the hydrochloric acid formed by the reactions between the hydrogen of the water and the chlorine, but not capable of retaining or of fixing the oxygen which is thus set free in its gaseous form." Secondly, by exposing oxides of manganese, "preferably the sesqui and the peroxides" to the action of chlorine, and preferably aiding the reactions between these by means of heat, applied either to the oxide or to the chlorine or to both, thereby forming chloride of manganese and setting free in its gaseous form the combined oxygen of the oxides. The residual chloride of manganese can then be treated for reoxidation of its metal."

[Printed, 4d. No Drawings.]

A.D. 1860, December 29.—No. 3191.

DAVIES, GEORGE.—(*A communication from Gabriel Descat.*)—
 “Improvements in printing calicoes and other fabrics.”

The invention relates to the production of a novel effect termed “double-faced printing” (*impression sans envers*). The inventor takes a cylinder printing machine of any ordinary form, with two rollers arranged as usual for printing two colours, with the exception that the second cylinder, instead of being engraved, is simply pounced, and instead of revolving in a trough containing colour, moves in a bath of water, gum water, or any other liquid capable of slightly damping the colour applied to the fabric by the first cylinder, and assisting its capillary movement into the pores or interstices of the fabric. The fabric is passed between the pressing roller and the first engraved cylinder, then between the second cylinder, and the pressing roller, at which moment the impression becomes moistened by the small quantity of liquid adhering to the second cylinder, and at the same time receives a considerable pressure, so that the colour, instead of remaining on the surface of the fabric, passes completely through it, and thus appears equally on both sides of the fabric, or, in other words, has no “wrong side.” A shaded impression is produced by engraving the second cylinder in such a manner that those parts of the design which are required to be darkest are sunk or “intagliated.”

[Printed, 4d. No Drawings.]

 1861.

A.D. 1861, January 5.—No. 27.

VIAL, LOUIS CHARLES EMILE.—(*Provisional protection only.*)—
 “Improvements in the manufacture of colouring matters and
 “pigments from coal oil, raw naphthaline, and from the
 “waste lime from gasworks.”

The coal oil, or raw naphthaline, is treated with an alkali or alkaline earth, such as potash, soda, or lime, under exposure to the air. A red colouring matter is thus formed, which may be used in that state, or separated from the materials with

which it is mixed, by treating with a suitable alkaline solution (as subcarbonate of soda) and precipitating the colouring matter therefrom by the addition of "any suitable acid, such, for instance, as sulphuric or acetic acid." "For obtaining the green or bluish colouring matter, I treat waste lime from the purifying apparatuses of gasworks with a suitable acid, such, for instance, as nitric or hydrochloric acid, by which means a precipitate of a more or less deep green or bluish colour is formed, and which may be made use of in that state, or may be suitably purified by washing."

[Printed, 4d. No Drawings.]

A.D. 1861, January 10.—No. 67.

WILLIAMS, CHARLES HANSON GREVILLE. —(*Provisional protection only.*)—"Improvements in the manufacture of dyes and colouring matters."

To overcome the difficulty experienced in making purple dyes from the insufficient solubility in water and spirit of most of the blue dyes "at present known," by this invention, a blue dye is used produced from quinine, cinchonine, strychnine, and brucine, or by the treatment of coal tar, or tar from shale, bones, &c. (treated according to No. 1090, A.D. 1859). The blue dye thus obtained is soluble in spirit, and by mixing therewith the aniline red, a solution is produced capable of dyeing purple colours on fabrics. Reds are obtained from aniline by heating a mixture of nitrate of manganese and aniline, or any of its homologues. On treating the mixture with boiling water, the water dissolves out a portion of the colour, which may be obtained on cooling, when it will settle out. Any of the colour which remains dissolved may be obtained "by taking advantage of the fact of its being comparatively insoluble in saline solutions." A red colour may also be obtained from aniline or any of its homologues by treating the same with anhydrous or hydrated chloride of antimony.

[Printed, 4d. No Drawings.]

A.D. 1861, January 12.—No. 97.

GIRARD, CHARLES ADAM. —(*Partly a communication from Georges de Laire.*)—"Improvements in preparing colouring matters for dyeing and printing."

For these purposes red aniline dye is purified and mixed with a quantity of aniline in about equal proportions. The mixture is maintained for several hours at a temperature between 155° and 180° (Centigrade), and as nearly as possible to 165° . "The substance, which is now violet, is boiled in a mixture of water and hydrochloric acid. The excess of aniline and of red dye which has not been transformed is dissolved, and a violet residue remains. This residue is completely soluble in alcohols, acetic acid, wood spirit, and boiling water slightly acidulated with acetic acid. All these solutions may be applied directly for dyeing violet. In order to obtain the blue dye, the violet mass is boiled several times with hydrochloric acid diluted with a small quantity of water, and then washed with boiling water. The substance thus obtained is a blue, having a bright coppery lustre. To employ this colour in dyeing it is sufficient to dissolve it in vinegar, or alcohol, or wood spirit, and to dilute these solutions with a convenient quantity of water." The hydrochlorate of aniline and red dye contained in the liquids obtained by treating the violet mass with hydrochloric acid and water are precipitated by an alkali. The aniline thus recovered may be purified by distillation.

[Printed, 4d. No Drawings.]

A.D. 1861, January 14.—No. 101.

HALL, VINCENT.—(*Provisional protection only.*)—"Improvements in obtaining colouring matters."

The invention consists in obtaining colouring matter from the heavy oil of coal tar, technically called "dead oil." The crude dead oil is first separated from the acids and basic bodies which it naturally contains. The remaining neutral hydrocarbons are submitted to fractional distillation, the various products obtained at, say, every 10° of temperature being separated. "I act upon these fractional products with concentrated nitric acid, and thereby produce nitro-compounds which I reduce to basic bodies by sulphide of ammonium, nascent hydrogen, acetic acid, and iron filings or other suitable chemical agent." "The desired basic or other bodies having been thus obtained, I treat them, for the purpose of obtaining the colouring matters therefrom, much in the same way as is now practised for obtaining

“ colouring matter from aniline, but I sometimes operate upon these bodies with nitric acid or nitrates and other chemical agents which are not usually employed for acting upon aniline; and various descriptions of colouring matter may be thereby produced, and may be employed in the usual manner for dyeing or other purposes.”

[Printed, 4d. No Drawings.]

A.D. 1861, January 18.—No. 139.

TOWNSEND, JOSEPH, and WALKER, JAMES.—“ Improvements in mordanting and in the manufacture of products to be used as mordants and otherwise.”

The invention consists, 1st, “ in using hyposulphite and sulphite of alumina as a mordant in Turkey red dyeing instead of the mordants hitherto employed;” 2nd, in preparing these substances, the “ oxidised liquor,” containing hyposulphite and sulphite of lime, obtained from “ soda and potash wastes,” according to No. 3038, A.D. 1860, is mixed with a solution of alum or sulphate of alumina, in such proportion (54 oz. commercial sulphate of alumina or 75 oz. of alum to every gallon of “ oxidized liquor,” of a specific gravity of 1.25 or 50°, Twaddell) that the sulphate of alumina will be all converted into hyposulphite and sulphite of alumina. 3rd. The precipitate from this mixture is termed “ precipitated antichlore.”

The mordant may also be prepared by substituting for the oxidised liquor, any of the supernatant liquors containing hyposulphit and sulphite of soda, potash, ammonia, or magnesia separated from the precipitated antichlore.

The mordant may also be prepared by substituting for alum or sulphate of alumina, the chloride or nitrate.

[Printed, 4d. No Drawings.]

A.D. 1861, January 24.—No. 189.

HENDERSON, HENRY.—“ Improvements in machinery or apparatus for printing yarns or threads, part of which machinery or apparatus is applicable to the twisting of fibrous materials.”

The invention consists:—1st. In covering the surface of the drum on which the yarn is laid with a soft elastic substance,

so that it may adapt itself to the shape of the pulley employed for laying on the colouring matter. The colour pulley is fitted in the colour trough in the ordinary way, but is made with a fluted or grooved periphery of a size to contain colour sufficient to saturate the yarn as the pulley passes over it. The pulley, in its passage under the drum, is pressed against it by springs. By this means, any ridge or surplus colouring matter between the strips or layers of colour is avoided. 2nd. A new arrangement of the carriage containing the colour box and pulley. Instead of placing the colour box on springs, the colour pulley alone is placed in elastic bearings, so that the colour pulley alone is depressed when passing under the drum. In the process of unwinding the yarns from the bobbins on to the printing drum or cylinder, an arrangement is employed whereby the bobbins remain at rest while the yarn is being wound off.

[Printed, 4d. No Drawings.]

A.D. 1861, January 25.—No. 199.

HUGHES, EDWARD THOMAS.—(*A communication from Léon and Edouard Pavin de Lafarge.*)—"Improvements in machinery or apparatus for pulverizing clay and other materials."

The invention relates particularly to grinding or pulverizing earth or clay previous to its manufacture into bricks, &c.; "but the machine will also be applicable to grinding or pulverizing grain, stones of fruit, dyewoods, and similar articles." The apparatus consists of any strong framework of wood or metal standing in a vertical position, at the top of which is fixed a receiver and hopper to receive the material to be crushed. Inside this frame is a number of revolving blades, or cutters, which bruise or crush the material into coarse pieces, and then allows them to fall to another set of blades or crushers, but of a finer description for some kinds of material, "and for most purposes these two processes will be sufficient; but if not, one or more of a finer description may be added, the pulverized material falling through the last into a receiver ready for use. The revolving blades or cutters are turned by power by passing a shaft through the apparatus, and fixing on the ends projecting outside the

“ necessary drums or pulleys. The said shafts may all be turned at the same speed, or varied at discretion.”

[Printed, 1s. 2d. Drawings.]

A.D. 1861, January 26.—No. 209.

DREVET, CHARLES ACHILLE.—(*Provisional protection only.*)—

“ Improvements in the manufacture of sulphurous acid, sulphites, and bisulphites, and sulphuric acid, and in the apparatus employed therein; and in the application of one of the products of such manufacture to the bleaching of textile, animal and vegetable substances.”

A quantity of sulphur is placed in a hermetically sealed cast-iron retort, into which a current of air is forced through a perforated plate. On heat being applied to the retort, the sulphurous acid produced passes through a receptacle divided into compartments, in which the flower of sulphur deposits and is cooled in a leaden serpentine or worm, whence it is passed into the receptacle with compartments containing either water or a solution of a base or of a carbonate. The azote in a free state and the carbonic acid gas (when a carbonate is employed) escape into the atmosphere through an opening. A gas epurating apparatus is also employed when a bi-salt is formed. “ The bisulphite of soda obtained by the preceding process I employ for bleaching wool and other textile animal and vegetable substances. The bisulphite of potash or ammonia will act in the same way as the bisulphite of soda. After the ordinary cleansing, to which the textile, animal, or vegetable matter, such as silk, cotton, flax, hemp, and straw have been subjected, I employ sulphate of soda, and obtain a bleaching much more perfect and complete than by the ordinary process.”

[Printed, 4d. No Drawings.]

A.D. 1861, January 29.—No. 229.

VERKRÜZEN, THEODOR ANTON, and VERKRÜZEN, MORITZ ANTON.—A metal paint, and “ applying the same by painting

“ in gold and imitation gold, silver, or other metal color “ on velvet, cloth, and other fabrics having a pile or woolly “ or flossy surface.”

This invention consists first in preparing the colour "for gold, silver, bronze, &c.; one part of metal powder of the respective kind or color required," one part of a solution of equal parts of water and gum arabic (by bulk) for the base of the metal paint; a similar base may also be prepared by one part of metal powder, and substituting the white of egg for the gum arabic, adding a little flake white and sepia to give consistency when found desirable." The base prepared as first described is however preferred. Having prepared the base, when about to use it, it is mixed with equal quantities of dilute methylated spirit, consisting of one third of methylated spirit to two thirds of distilled or clean water.

Second in producing the required design, using sable or hair brushes, and working the paint in upon the surface as required; in shading adding more or less of the dilute spirit according to the depth of shade required; "in giving the fine lines and finishing touches" a very small proportion of the dilute spirit is used.

[Printed, 4d. No Drawings.]

A.D. 1861, February 2.—No. 286.

MARSHALL, JAMES GARTH.—"Improvements in the treatment of flax, hemp, and other fibres in various stages of preparation and manufacture."

The invention relates to "a novel mode of treating such fibres in the various processes in which saturation or maceration of the fibres or separation of extraneous matter from them is or may be required," and consists:—1st. "in placing the fibres or fibrous material or fabric in a close vessel, supplied with the liquid or chemical solution with which it is intended to saturate or macerate the fibres or fabric, and then exhausting the air from such closed vessel so as to allow the liquid or chemical solution to enter more freely into the fibres or fabrics;" 2nd., in treating slivers, yarns, or fabrics, made from flax, hemp, and other analogous fibres, by injecting water or any chemical solution with considerable force, so as to cause the liquid thoroughly to penetrate into the interior and to "macerate" the fibre; 3rd., in dissolving or separating extraneous matters from the slivers,

&c., by employing a heated liquid or chemical solution in conjunction with either or both of the processes above described.

[Printed, 4d. No Drawings.]

A.D. 1861, February 8.—No. 316.

STARK, MICHAEL JOHN.—"Improvements in the preparation
" of colouring matters for dyeing, staining, or printing
" fabrics, stuffs, and yarns of cotton silk or wool or such like
" substances."

The invention consists in a mode of obtaining colouring matter from aniline, xyloidine, cumidine, toluidine, or other analogous substance. To any of these substances, or a mixture of any of them, is added an equal weight of hydrochloric, nitric, sulphuric, acetic, tartaric, or other acid that will unite with it. This solution, after being diluted with an equal bulk of water and stirred, is mixed with a ferri-cyanide or a ferro-cyanide of any base, or a mixture of these cyanides or any other combination containing cyanogen. These solutions are boiled together for some time and cooled. A copious grayish blue precipitate is thus obtained by decantation or filtration, and this, when boiled with a strong solution of an organic or mineral acid, produces blue, violet, lilac, purple ("Tyraline"), or red shades of colour, according to the proportions in which the above-mentioned substances are used. The dyes thus produced " may be used with or without the usual mordants for
" cotton, silk, or wool, or such-like circumstances."

[Printed, 4d. No Drawings.]

Disclaimer No. 316*.

STARK, MICHAEL JOHN.—Disclaimer and Memorandum of alteration to the Specification of Letters Patent, No. 316, A.D. 1861. The patentee, by a Disclaimer, dated October 23, 1861, after stating that the claims in such Specification are too extensive and general, declares that he is desirous of limiting his claim by confining it to the preparation of the colouring matters as particularly described in his said Specification by the action, not of all bodies containing cyanogen, " but only
" of certain bodies, that is to say, the ferro-cyanides of any
" base."

[Printed, 4d. No Drawings.]

A.D. 1861, February 9.—No. 328.

JARRETT, GRIFFITH.—“An improved apparatus applicable
“for marking linen and for other printing and stamping
“purposes.”

The dye or type box is fixed to the lower end of a plunger, working vertically in a standard, depressed by means of a hand lever and recovering itself by a spring. To the reverse end of the lever is a cord passing under a pulley, and connected to a parallel frame capable of sliding horizontally, and which carries the inking roller at its forward end. Upon depressing the lever, the cord draws the inking roller over the die. The lever then comes in contact with and depresses the plunger so as to give the impression. Upon releasing the lever, the plunger rises, and the inking roller, after passing over an inking table, returns to its original position, again rolling over the surface of the die, which is thus inked twice for each impression. The return of the inking rollers is due to springs attached to the parallel frame, which springs also, by means of the cord, serve to raise the hand levers to its original position.

[Printed, 8d. Drawings.]

A.D. 1861, February 22.—No. 440.

CROOKES, AUSTIN, and ROBERTS, HENRY.—(*Provisional protection only.*)—“An improvement in doctors, calico webs,
“or scrapers, used in the process of printing calicos, muslins,
“and other textile fabrics.”

“The improvement consists in coating steel or other metal
“doctors, calico webs, or scrapers, with copper, silver, tin, or
“any other suitable metal by galvanic or other process for
“the purpose of resisting the chemical action of the colours
“employed in printing textile fabrics.”

[Printed, 4d. No Drawings.]

A.D. 1861, February 23.—No. 456.

MARTIN, JAMES.—(*Provisional protection only.*)—“Improvements in the preparation of red dyes.”

“The dyes which form the subject of this invention are prepared by mixing aniline, nitrate of lead, and mono-hydrated
“glacial acetic acid, and heating the same together. The
“mixture is afterwards poured into water, and the whole

“ having been heated, is then filtered, the residuum being
 “ again treated in a like manner. Any undecomposed nitrite
 “ of lead, or new organic compounds of lead which may remain
 “ in the filtrate, may be removed by the use of oxalic acid or
 “ other organic acid, and a still greater degree of purity may
 “ be obtained by the addition of common salt. Although the
 “ nitrite of lead only has been mentioned as being mixed with
 “ aniline and acetic acid, this invention includes the pro-
 “ duction of red dyes, by combining aniline with other nitrites
 “ yielding oxygen on the application of heat.”

[Printed, 4d. No Drawings.]

A.D. 1861, March 8.—No. 587.

LEAKE, ROBERT, junior, and SHIELDS, WILLIAM.—“ Im-
 “ provements in machinery for engraving, stamping, or em-
 “ bossing cylinders and other surfaces used in printing and
 “ embossing fabrics and other materials.”

The object of the first part of the invention is “ to supersede
 “ a rising and falling weight hitherto employed for striking
 “ on a block in which a punch is fitted for giving the requisite
 “ impression to a cylinder or other surface.” “ A punch or
 “ mill is fixed in a block or frame, connected with a slide
 “ fitting in a second slide, to which an up-and-down or to-and-
 “ fro motion is given by an excentric or other equivalent
 “ means. We propose to furnish the second slide with washers
 “ of vulcanized india-rubber or other suitable springs which
 “ will modify its pressure and consequently the pressure on
 “ the punch or mill, by means whereof a uniform impression
 “ is imparted to the cylinder or other surface, notwithstanding
 “ any slight deflection of the same.” The second part of the
 invention consists in making the head of the block which
 holds the punch partly spherical, fitting in a suitable socket
 and regulating the blocks by screws for the purpose of being
 able to set the punch to any angle whereby it can be easily
 adjusted to the surface on which it acts.

[Printed, 1s. 2d. Drawings.]

A.D. 1861, March 12.—No. 612.

GRATRIX, ROBERT HODGSON.—(*Provisional protection only.*)—
 “ Improvements in dyeing and printing textile materials and
 “ fabrics.”

The invention relates to colours derived from aniline, naphthaline, nitro-benzine, cinchonine, and analogous substances, and is founded on the discovery—1st, That fast colours may be produced by passing cloths prepared with stannate of soda or other suitable mordant through a thickened solution of tannin, and, after the ordinary dyeing, subjecting it to the action of steam; or cloth or yarn thus prepared “may be padded through an acid or other solution of a compound of tannin and the colour intended to be used.” 2nd. That mixed fabrics of cotton and worsted may be dyed by “a more simple method than that employed at present, which involves two processes of dyeing, by passing the cloth through soap after the preparation of shumach or other such agent.” 3rd. That in dyeing worsted the preparation known as “chemic” enables the material to receive a faster and better colour. 4th. That if in printing, a suitable “reserve” be printed upon the cloth prepared with stannate of soda, and afterwards be passed through a solution of galls, or printed or padded with the same, and afterwards steamed or not as the reserve may admit, and then dyed and cleaned, the parts reserved will be white. A combination of oleic acid and tin may also be formed, which will act as a mordant for these colour. Various mixtures of fustic, bark, oxalate of tin, compound of tannin, &c., are mentioned as suitable for the production on fabrics of the colours above mentioned.

[Printed, 4d. No Drawings.]

A.D. 1861, March 14.—No. 627.

PATTISON, ROBERT THOMSON, and PATTISON, ADAM MONTEITH.—(*Provisional protection only.*)—“Improvements in the means and method of fixing colours, in connexion with the printing of woven fabrics and yarns.”

The invention consists in the combined use of tanning matter with an alkaline earth for fixing certain colours derived from tar products upon woven fabrics and yarns in the process of printing. “We take a portion of tannin and combine it with a portion of alkaline earth (preferring magnesia in its caustic state), by mixing up both together in water, and then add the colouring matter, and thicken with gum or other appropriate thickening matter in the manner well known to printers. The product is then printed on the goods to be

“ operated upon in the usual manner, and the goods thereafter
“ exposed to the action of steam, also in the usual manner.
“ The proportions in which the tanning matter and the alka-
“ line earth are used may be varied or modified according to
“ the particular colour or shade of colours required to be
“ fixed and other circumstances.”

[Printed, 4d. No Drawings.]

A.D. 1861, March 18.—No. 682.

MILLER, JOHN STEVENSON, and MILLER, THOMAS PATERSON.
—“ Improvements in fixing colouring matter, more especially
“ those derived from aniline or other similar bases, on fibrous
“ materials and textile fabrics.”

Under one modification of the invention the fabric is passed through a solution of the acetate of galls and dried; it is then printed. The colouring matter derived from aniline is added to a solution of tartro-acetate of stannate of soda or potash, or double salts of the stannate of soda or potash with other acids, or a tartrate or citrate of the stannates of soda or potash will answer the purpose. To this acidulous solution the colouring matter is then added, and the mixture thickened with gum, &c. “ The goods, after being printed with the colour, are
“ steamed in the ordinary way, which completes the process.”
Or the fabric may be “ printed or dyed in the ordinary way,
“ and afterwards treated with gallic or tannic solutions.”

“ In either process solutions of galls, shumac, valonia, or
“ other gallic or tannic substances may be used in place of the
“ acetate of galls first herein-before mentioned. So also in
“ the preparation of the colouring matters, other metallic bases
“ than those obtained from tin, lead, or zinc, or other acids or
“ neutral solutions of salts, may be used in lieu of those herein-
“ before named; the essential feature of our invention being the
“ direct application of the colouring matters to the fabric or
“ material which is treated, either before the printing operation,
“ or subsequently thereto, with any gallic or tannic
“ preparation.”

[Printed, 4d. No Drawings.]

A.D. 1861, March 20.—No. 693.

BROOKS, THOMAS.—“ Improvements in producing combina-
“ tions of certain colours on cotton fabrics.”

"In printing for the various colours derived from aniline, in combination with colours derived from madder and garancine, it has heretofore been requisite to perform the operations separately, either by cylinder or block, or partly by cylinder and partly by block. Now my invention consists in applying the mordants or other fixing substances for the aniline and the madder or garancine colours to the fabrics simultaneously, thereby rendering them capable of receiving the aniline and madder or garancine colours by the subsequent operations of dyeing." "The mordants used for the madder, garancine, alizarine, or colours derived therefrom are those which are generally employed by calico printers and dyers." The mordants preferred for the various colours derived from aniline are as follows:—1st, acetate of tin; 2nd, a preparation of tin combined with tannic acid, and 3rd, a preparation of tannic acid.

[Printed, 4d. No Drawings.]

A.D. 1861, March 20.—No. 701.

LLOYD, NATHANIEL, and DALE, JOHN, GALLEMORE.—"Improvements in dyeing and printing textile materials and fabrics."

The invention relates to dyeing with colours derived from aniline, naphthaline, and other substances of the same class. The colour to be used is mixed with tannin and thickened with gum senegal, &c. It is printed upon unprepared goods steamed and passed through a boiling solution of tartarized antimony. "Or we print on tannin alone, thickened with gum senegal, steam, and pass through the antimony solution, and afterwards dye the cloth in a weak solution of mauve or other aniline colour, which solution we prefer to be used with acetic acid." For the first process the colour is compounded of 1 gallon gum water, 8 to 13 oz. of pure tannin, and colouring matter to shade required. In the second process, for a dark shade 20 oz. of pure tannin is used to one gallon of gum water, and for a pale shade about 3 or 4 oz.

[Printed, 4d. No Drawings.]

A.D. 1861, March 20.—No. 704.

HENRY, MICHAEL.—(*A communication from Charles Torme.*)—(*Provisional protection only.*)—"Improvements in treating yarns

“ and threads of silk and other fibrous materials for purposes
 “ of restoring colour thereto, and improving their quality
 “ and appearance, also in apparatus employed in operating
 “ on yarns and threads.”

The first of these objects is effected by subjecting faded silk &c., to the action of a “regenerating” or “improving” bath, or a solution of gelatine, size, glue, dextrine, albumen, or similar substance. “It is also proposed, when desirable, to
 “ subject threads or yarns so treated to an additional operation
 “ for forcing the gelatine or other regenerating or improving
 “ agent into the body of the fibrous material, incorporating it
 “ therewith, and removing the excess. By these means body
 “ is imparted to the thread, and the down, flue, or loose fibres
 “ or filaments removed.” A dyeing agent, varying with the colour, is used in combination with the regenerating substance for threads other than black; for example, carbonate of soda, sulphuric, citric and tartaric acid, alum, indigo, cochineal, &c. It is preferred to act on the threads singly, subjecting them to the bath one by one, and afterwards passing them between heated cylinders. The singeing and regenerating may be performed in one machine, or separately, the threads being led over pulleys with several grooves on the edge, so as to bring them over or through the singeing flame or agent repeatedly, and they are drawn or rub against a pulley or pulleys after being singed.

[Printed, 4d. No Drawings.]

A.D. 1861, March 25.—No. 740.

MANBY, WILLIAM EDWARD. — (*Provisional protection not allowed.*)—“The manufacture of paper, linen, cotton, or other
 “ fabric prepared with a preparation of blue to be used for
 “ the purpose of washing or other purposes.”

“This invention consists of a solution of indigo and other
 “ ingredients, which I apply to paper, linen, cotton, or other
 “ fabrics to be used for the purpose of colouring water or
 “ other liquids for washing, dyeing, and other purposes.”

[Printed, 4d. No Drawings.]

A.D. 1861, March 25.—No. 750.

VERSMANN, FREDERICK. — (*Provisional protection only.*)—
 “Improvements in the manufacture of colour adapted for
 “ dyeing, printing, and other uses.”

The improvements relate to the employment of titanium or its compounds with other matters in the production of colouring matter or material. "I first obtain titanic acid, or a salt of titanium, and this I do by subjecting titanium ore, such as rutile, iserine, and others in combination with soda ash or bi-sulphate of soda or potash, to a melting heat, by preference in a reverberatory furnace. The result obtained, when a green colour is desired, I mix in solution with a solution of the yellow prussiate of potash, the resulting precipitate of which will be a fine green colour, which may be varied in shade by admixture with other matters or materials. Or the desired colour may be obtained upon a surface by first passing the surface through a solution of titanic acid, or salt of titanium, and then through a solution of the yellow prussiate of potash. I also take titanic acid, or a salt of titanium, and after mixing it with a deoxidizing agent, such as borax, microcosmic salt, charcoal, or tin, I dissolve it by fusion with glass or other flux. The mixture obtained, when ground or reduced [to powder, may be used as a colouring matter or material."

[Printed, 4d. No Drawings.]

A.D. 1861, March 30.—No. 787.

BARTON, GEORGE, and SOAR, THOMAS.—"Improvements in washing, wringing, and mangling machines, applicable also for dyeing or bleaching purposes, to be called 'the Nottingham Washing Machine.'"

The machine consists of a trough or box formed within of such shape "that with the two ends it represents six sides of a decagon." Upon part of the bottom of the trough are three or more strips the width of the trough. Intermediately from each end of the trough, and at each side of it, nearly level with the top, is a bearing carrying the ends of an axle placed horizontally across the width of the trough. On this axle is a casting in which are two or more rows of sockets, into which are driven pegs similar to "dolley" pegs. The axle at one or both ends protrudes a little beyond the outside of the trough, having a lever or levers secured to one or both ends. A stud at the end of the lever or levers receives a pin in the end of the connecting rod or rods moved by a similar pin in the opposite end, which pin is fast on a wheel at one end of the trough. The wheels are driven by similar wheels of larger or

smaller diameter, according to the speed at which it is desired to move the pegs inside the trough. These last-named wheels are fast on an axle above the first-mentioned axle, and where it is required to attach wringing or mangling rollers to the washing machines the axles of the wheels may form the axles of such rollers, the end of one such axle being provided with a fly-wheel fitted with a handle. Motion being communicated to a fly-wheel, a to-and-fro movement from end to end of the machine is communicated to the pegs, and the articles are thus effectually cleansed without being unduly rubbed. The trough in which the articles are placed is heated by gas jets or by fire.

[Printed, 1s. 4d. Drawings.]

A.D. 1861, April 1.—No. 799.

LOWE, JOHN.—(*Provisional protection only.*)—"Improvements in the mode of applying colouring matter to certain textile fabrics and yarns in the process of dyeing and printing."

"My invention may be generally described as consisting in the use of natural gums as a resist for a spirituous solution of the colouring matter of alkanet root. I first run the fabric, say, for example, a piece of cotton cloth, through a solution of alum, and then dry. I then take a solution of natural gum and print it on the fabric, and then dry again. I then pass the fabric through mythelated spirit, and thereupon run the same through a spirituous solution of alkanet root; then either steam, or pass through warm water, according to circumstances, in the usual manner: then wash off and finish as usual. The resist may either be a colour or simply a white. The action of the mythelated spirit is to coagulate the gum, and enable it to resist the spirituous solution of colouring matter."

[Printed, 4d. No Drawings.]

A.D. 1861, April 4.—No. 835.

MILLER, JOHN STEVENSON, and MILLER, THOMAS PATERSON.—(*Provisional protection only.*)—"Improvements in fixing colouring matters on textile fabrics and fibrous materials."

The invention, based more or less on No. 682, of 1861,*

* The Provisional Specification of this Patent is referred to as "bearing date the 16th (? 18th) of March last."

“relates to the direct application of colouring matters, more especially those derived from aniline and other generally similar bases along with gallic or tannic matters, to textile fabrics or fibrous materials.” “Under one modification of these improvements a solution of acetate of galls is thickened with starch, gum, or any other suitable substance,” “and the colouring matter is added to produce the desired shade.” The preparation is applied “by any of the ordinary means” to the fabric, and it is only necessary to steam the goods to complete the process. In dyeing fibrous or textile fabrics, “it is not necessary to thicken the gallic and tannic solutions.” The goods may, previously to being treated with the colouring matter along with gallic or tannic solutions, be prepared with stannate of soda or potash, and precipitated by muriate of ammonia, or any salt or acid that will effect the precipitation of the stannous oxide in the fibre, or any preparation of metallic, aluminous, or other salts or preparation of metals or earths prior to or after printing or dyeing. Or any gallic or tannic solution, either singly or in combination with any vegetable or mineral acid, or any other salt or preparation will answer the purpose of combining with the colouring matter.”

[Printed, *4d.* No Drawings.]

A.D. 1861, April 13.—No. 911.

GRAHAM, GEORGE.—“Improvements relating to ornamental cotton fabrics having Turkey red grounds.”

“The ordinary means of producing a black device upon Turkey red goods is by printing either directly upon the red fabric, or upon white or other spaces obtained by discharging the red colour by means of the well known lead plate press.” By this invention, 1st, the black is produced in the press, for which purpose the lead plates being cut out in the ordinary way, and the goods being pressed between them, there is passed through the exposed parts of the goods the “mixture of chloride of lime and sulphuric acid commonly used for discharging the red colour.” This liquor being washed away, “the well-known yellow dye, consisting of acetate of lead and bichromate of potash,” is employed as a mordant or base for the black; logwood liquor is finally passed

through the goods, producing a very fast black. 2nd. Rollers or blocks "made to produce continuous patterns as for garments, are rendered available for obtaining certain styles in a novel way, and this whether the continuous pattern is produced by one or more printings or equivalent processes upon the Turkey-red goods. In practising this improvement the goods are first printed as for garments, and devices suitable for handkerchiefs, for example, are then produced upon them in the discharging press. The discharge liquor commonly used for plain Turkey-red goods, will in most cases not answer satisfactorily when there are other colours to discharge besides the red, but the object is obtained by combining with the ordinary discharge treatment of chloride of lime and sulphuric acid, a separate treatment with an alkali such as potash. In some cases the alkali may be used alone, the goods being afterwards well washed with hot water. The parts discharged may be variously coloured in the ordinary way, or they may be dyed wholly or partially black, according to the first part of the present invention."

[Printed, 4d. No Drawings.]

A.D. 1861, April 25.—No. 1042.

HUGHES, HESKETH, and HILL, CHARLES GREY.—(*Provisional protection only.*)—"Improvements in the manufacture of rollers for printing, embossing, and otherwise producing designs, patterns, figures, and shapes."

Rollers for calico printing may be manufactured according to this invention.

The rollers are manufactured of several discs of brass; these are fixed on a mandril, either close together or with more or less space between them, and they rotate with the spindle.

"The discs are stamped out of the flat, and the edges are so fashioned that the desired figure may be produced by one, two, or more of the edges of the discs when fixed on the spindle, and the repeat of the pattern may be obtained as many times as desired along the roller, dependent of course upon the length thereof." The figure of some patterns may be stamped on the edge of the discs, repeated all round and bent at right angles all in one direction, or some

in one and some in the other direction; a rest is formed for the figures so turned over to rest upon.

The spaces between the discs may be filled up with metal; any desired pattern may be cut upon the metal between the discs.

The discs may be cast with thin edges; the edges are stamped up or pressed to the desired pattern in the flat.

[Printed, 4d. No Drawings.]

A.D. 1861, April 30.—No. 1079.

MEYER, JACQUES.—(*A communication from Francis Leopold Sonnenschein.*)—"New chemical combinations," and "the application thereof to fixing aniline and pigment colours, in printing and dyeing, to tanning, waterproofing, and other industrial purposes."

The invention consists in the combination of certain organic substances, such as albumin, fibrin, glue, animal tissues, &c. with the oxides or salts of tungsten and molybdenum. When used for fixing aniline and pigment colours, they may be precipitated on the fabric along with the colours, or the fabric may be previously impregnated with a solution of tungsten or molybdenum, and printed afterwards with colours containing the organic substances above referred to. In waterproofing fabrics and other materials, the compounds must be of greater strength than in fixing colours. In tanning or preparing hides or skins "they are operated upon by the oxides or salts of tungsten or molybdenum, and converted into a material possessing the properties and uses of linen."

[Printed, 4d. No Drawings.]

A.D. 1861, May 1.—No. 1087.

ROUSSIN, FRANÇOIS ZACHARIE.—(*Provisional protection only.*)—"Colouring matters derived from naphthylamina, binitro-naphthalina, and trinitro-naphthalina, and application of such colouring matters to the dyeing and printing of fabrics."

"I prepare naphthylamina by causing minute grains of pewter and hydrochloric acid to react on nitro-naphthalina. The hydrochlorate of this element being brought in contact either with the azotite of potash or with the elements of the azotous or hypoazotic acid, yields a red colouring

“ matter immediately applicable to dyeing processes, as follows :—The fabrics or substances to be dyed are first dipped into an aqueous solution of hydrochlorate of naphthylamina then into a solution of azotite of potash, and afterwards washed in water. This red colouring matter being acted upon by acids, yields a violet colour of great beauty applicable to dyeing, which I fix by means of fixed and non-volatile acids, such as oxalic, tartaric, citric, lactic, and other acids, or by means of salts with acid reaction. By heating in a bath of oil at 250° Centigrade (482° Fahrenheit), a mixture of chloride of pewter and hydrochlorate of naphthylamina, there remains a residue which is soluble in alcohol and wood spirit; the solution is of a beautiful violet colour, unattackable by air, acids, or soap. The action of reducing agents such as soluble sulphurets, protosalts of pewter, cyanuret of potassium on the binitro-naphthaline, yields colouring matters red, violet, and blue, applicable to dyeing purposes. I obtain binitro-naphthaline by the action of azotic acid, smoking, or mono-hydrated on naphthaline.”

[Printed, &c. No Drawings.]

A.D. 1861, May 1.—No. 1092.

PATTISON, ROBERT THOMSON.—(*Provisional protection only.*)

—“ Improvements in the means and method of fixing colours in connection with the printing and dyeing of woven fabrics and yarns.”

The invention consists “ in the use or application of alkaline earths or their salts, without being combined with tanning matter or other combination, for fixing certain colours derived from tar products upon woven fabrics and yarns in the processes of dyeing and printing. Such use or application may be varied according to circumstances, and I do not therefore limit myself to any particular method; but, as an example, I may state that I take a certain quantity of aniline purple, thicken it with gum, and then add a solution of acetate of lime. The product is then printed on the goods to be operated upon in the usual manner, and the goods thereafter exposed to the action of steam also in the usual manner. The proportions in which the colouring matter is to be combined as above may be

“ varied according to the particular colour or shade of colour desired to be fixed.”

[Printed, 4d. No Drawings.]

A.D. 1861, May 11.—No. 1196.

DAVIES, HENRY JACKSON.—“Improvements in apparatus or “ machinery for printing textile fabrics or materials.”

The apparatus is adapted for printing two or more colours at one operation. It consists of a pot or vessel divided into a number of cells containing the several colours. The colours are conveyed by means of suitable ducts to a hollow block, the surface of which is cut out so as to correspond to the pattern to be printed, and so that the several colours may be made to flow into the compartments of the block at pleasure. A portion of the several colours is conveyed by means of a lifter and put upon a sieve, which is arranged upon a serving tub near at hand. This sieve is formed in raised parts corresponding in figure to the pattern. The colours transferred to the sieve by means of the lifter are then spread evenly over the surface of the sieve by means of a roller, the periphery of which is also cut in relief with a pattern corresponding to the raised portions of the sieve. In this way, as the roller passes over the sieve, the figures on its surface register with those of the sieve, and thus prevent any blending or confusion of the pattern arising from the intermixture which would otherwise occur. The sieve has fixed to it on each side a rack on which two wheels move to and fro. These wheels are keyed to the shaft of the colour-distributing roller, which is thus caused to travel easily and accurately over the surface of the sieve, and to distribute the colours thereon in an even and perfectly uniform manner. The several colours being uniformly distributed on the sieve, “the printer proceeds, according to “ the ordinary mode for impressing these colours upon the “ textile fabrics or materials to be operated upon.”

[Printed, 1s. Drawings.]

A.D. 1861, May 15.—No. 1235.

WOOLLER, JOSEPH.—“Improvements in machinery or appa-
“ ratus for dyeing textile fabrics and materials, which
“ improvements are also applicable in scouring or dyeing of
“ the said materials.”

The improvements consist in distributing the heat over comparatively larger surfaces than heretofore, "and by continually subjecting fresh parts or sides of the material to be dried to a current or currents of air created by a fan fixed in or near such apparatus. I effect this in chambers or compartments formed round a hollow spindle or axle, the sides of which chambers or compartments are also made hollow of sheets or plates of iron, tin, copper, or any other suitable metal, so that the steam which is introduced through the hollow axle may rise into every one of the sides forming the above-mentioned compartments, thereby heating them and producing a large heated surface. In one or more of the compartments so formed a fan is fixed, and the blast of this fan conducted through all the compartments, which are covered with wire gauze, perforated plates or grates to prevent the vapour arising from the material to be dried to escape freely. By giving the axle of the apparatus a rotary or an oscillating motion, it will easily be seen that any material contained in the compartments will be continually turned over, and thus at every turn present a fresh surface to the combined action of heat and air."

[Printed, 1s. 4d. Drawings.]

A.D. 1861, May 15.—No. 1238.

RILEY, JOHN.—(*Provisional protection only*).—"Improvements in certain materials to be used in the process of dyeing and printing."

"Instead of mixing stannate of soda with other materials to make a compound salt for the purpose of calico printing or dyeing, I make a compound salt by mixing tungstate or any compounds of tungsten or tungsten acid with stannate of soda and other materials as heretofore used, the said tungstate of soda or compounds of tungsten or tungsten acid not having been hitherto used for these purposes."

[Printed, 4d. No Drawings.]

A.D. 1861, May 17.—No. 1266.

CLARK, WILLIAM.—(*A communication from François Zacharie Roussin*).—(*Provisional protection only*).—"Improvements in the preparation or manufacture of artificial alizarine."

"I introduce into a capacious reservoir a mixture of bi-nitro-naphthalina dissolved in concentrated sulphuric acid and granulated pewter, and heat it until some white vapour appears therein. A quick reaction is manifested; the mixture becomes black and increases in bulk. When the reaction is completed, I treat the doughy mass with a quantity of boiling water and filter it. By cooling the the filtered liquor some alizarine settles, and there remains in the filter a large amount of alizarine, which can be dissolved in caustic carbonated alkalies, and again precipitated by an acid. All the sediment or deposits thus formed are placed together, and then sublimated or crystallized in alcohol."

[Printed, 4*l*. No Drawings.]

A.D. 1861, June 13.—No. 1520.

ILLINGWORTH, JONAS. — "Improvements in ventilating dyehouses, and other houses and buildings, and in sizing cotton warps."

"The object of part of the improvements is to cause the steam employed in various processes to pass freely away from the apartment or chamber in which it is employed. For this purpose I form all parts of the roof or flooring where the steam is produced or set free as air-tight as possible, and also by its thickness or otherwise, so as to avoid the conduction of cold within. I admit all the air required from the lower part of the room. I apply pipes, chimneys, or other ventilators rising above the roof to a considerable height, say from 2 to 40 feet, formed to prevent the admission of rain, and yet allow the free escape of the steam, and so that any moisture formed by condensation on the ventilators may be readily conducted away."

[Printed, 1*s*. 4*d*. Drawings.]

A.D. 1861, June 17.—No. 1543.

GRAY, THOMAS. — "An improved method of bleaching coloured rags and vegetable fibres."

For bleaching rags, linen or cotton, including fast colours, any required quantity of such rags is thoroughly cleansed and

and boiled, "according to the usual method of cleansing rags
" for paper-making." They are then immersed in a solution
of muriatic acid (1 part) and water (32 parts), and left there
for two hours, after which they are taken out and drained,
but not dried, on a slanting board attached to one side of the
vat. "After the rags have undergone the processes above
" described, they are to be placed in a sufficient quantity of
" ordinary chlorine bleaching liquor, the proportions of
" which are well-known, and after the rags have immersed
" therein for the space of about fifteen minutes it will be
" found that the colours have been completely discharged,
" and that the rags are then fit for pulping and undergoing
" the ordinary remaining processes of paper-making, and that
" the fibres of the linen or cotton will remain uninjured, and
" will be as strong as they were before undergoing the process
" of bleaching."

[Printed, 4d. No Drawings.]

A.D. 1861, June 17.—No. 1547.

MELLODEW, THOMAS, KESSELMAYER, CHARLES WILLIAM, and WORRALL, JOHN MAYO.—"Improvements in dyeing
" and printing velvets, velveteens, and other fabrics with
" floated threads."

The invention relates to such fabrics with floated threads
as are woven with a silk face and a cotton back, and has for
its object to produce a colour on both those materials.
" This we accomplish by previously applying the solution of
" iron or other mordant to the back only of the above described
" fabrics by the process known as 'padding,' the subsequent
" washing out in water conveying sufficient of such mordant
" washed out of the back to the silk face of the fabric, either
" without or with a slight addition of such mordant, accord-
" ing to the shade of color required. By means of this
" process a larger quantity or greater strength of such
" mordant is applied to the cotton in the back of the fabric
" than to the silk face of the same, so that in the subsequent
" process of dyeing, a colour is produced at the same time
" upon both these materials without injury to the silk face.
" If another colour be desired for the silk face than for the
" cotton back of the fabric, either another mordant may be
" used during or after the washing out," "or the silk face

“ may be dyed in the usual manner after having been thus washed out.” “ By another method we apply the mordant to the cotton yarn previously to the weaving of the fabric, and thus produce a similar result to that described above after the fabric has been dyed.”

[Printed, *ad.* No Drawings.]

A.D. 1861, June 22.—No. 1609.

ORMEROD, ROBERT.—“ Improvements in the manufacture of ornamental or fancy ribbons, and in the machinery or apparatus connected therewith.”

The invention “ consists in printing patterns or devices in the form of ribbons upon calico or other fabrics in the piece, by means of the well-known method of engraved cylinders, the cylinders being engraved with the required designs, and the colouring apparatus adapted as usual. When the entire piece is printed, the ribbons so produced are to be severed or divided by an arrangement of cutters and wound upon spools as ordinary ribbons, and are to be employed for trimmings and other suitable purposes.”

[Printed, *ad.* Drawing.]

A.D. 1861, June 29.—No. 1668.

NEWTON, ALFRED VINCENT.—(*A communication from Seth Baker.*)—“ Improvements in lapping used in machines for printing textile fabrics, part of which improvements is applicable to driving bands.”

The invention consists in the use in printing machines of a lapping made in the form of an endless band or belt, and composed of one or more layers of woven material either with or without a surface or coating of india-rubber or gutta percha. The mode preferred for making the thick web constituting the lapping is that described in the schedule annexed to the Letters Patent of the United States, dated 18th May, 1858, and numbered 20,267. The ends of the band are united so as to form a strong lap without any perceptible seam or joint, in the following manner:—“ If a woven fabric is used composed of several tiers of filling threads interwoven with the warp threads, cut a sufficient number of the warp threads to liberate the first tier of filling threads on the parts at the

“ opposite ends of the fabric which are to form the lap or joint. Then at any suitable distance, say one inch from the edge thus formed on the fabric, thin the whole surface of the lap by the removal of the second tier of filling threads, and in like manner continue to reduce the thickness of the fabric until but one tier of filling threads interwoven with the warp remains at the ends of the fabric.” The two bevilled or thinned surfaces thus obtained are put together by means of india-rubber or other cement without any perceptible seam. The same method of joining ends is applicable to driving bands.

[Printed, 1s. Drawing.]

A.D. 1861, July 4.—No. 1699.

MILLS, RICHARD.—(*Provisional protection only.*)—“ Improve-
ments in washing, wringing, and mangling machines.”

“ Instead of making the bowls or rollers of wood, as heretofore adopted, I make them of cast iron, and cover the surfaces with zinc, tin, or other suitable metal. I cast them hollow with the shaft through and attached, and I inject steam into them to assist the drying of the goods. The said rollers are applicable to domestic machines as well as those used by bleachers, printers, and others.”

[Printed, 4d. No Drawings.]

A.D. 1861, July 11.—No. 1755.

ASHWELL, HENRY. — “ Improvements in apparatus for
“ washing, cleansing, scouring, getting up, dyeing, boiling,
“ and steaming.”

The apparatus consists of a trough, which in a large apparatus is bolted to the floor, in the inner and outer sides of which are placed two or more pairs of vertical guides. In these guides slide rods connected to a crosshead extending across the trough. To the centre of the crosshead one end of a lever is secured by a pin and hinge or other attachment. The other end of the lever is connected to a rocking lever moved by another lever, and driven by being connected to a rod moved by an eccentric on the shaft of a prime mover. To the crosshead is attached a frame carrying a cage of wood or metal strips or perforated metal made to open for the insertion of goods. Nearly over the centre of the trough, lying by the

side of the crosshead, is a perforated metal pipe with a stop-cock, through which hot or cold water is distributed in a shower over the whole of the top of the cage. The bottom of the trough is also provided with a pipe and stop-cock, through which steam is admitted. Similar pipes and stop-cocks are provided for admitting other liquids. There is a stop-cock at the bottom of the trough to let off the liquid when required. The goods being put in the cage, and the lid fastened down, the valve at the bottom of the trough is left open and the machine put in motion. Water being admitted through the pipe, passes through the goods and out at the valve, "or if the valve be closed, the water will remain in the trough and the goods may be alternately raised and depressed on the water as long as is found convenient. Dyes or other liquids are admitted (according to the work to be done) through the various pipes."

[Printed, 1s. Drawings.]

A.D. 1861, July 15.—No. 1783.

DE LA PROVOTAIS, EMILE GEORGES FERMIER.—"Extracting the fibres from *genista scoparia* (broom) and their application to manufacturing paper and fabrics, and also treating the washing waters so as to obtain dyeing products thereof."

The following is the method of preparing the fibres of the broom:—"I first collect the broom; 2, steep it in water heated with steam; 3, bark or decorticate it by passing it between stone cylinders; 4, I mechanically separate the fibres from the ligneous part; and, 5, treat the ligneous fibres to convert them into threads similar to hemp or flax threads." A method is given for preparing "the broom for conversion into paper pulp." "By treating the washing waters which contain gummy resinous matters, I obtain picric acid and other colouring products, and also salts with which I produce green and yellow colours."

[Printed, 4d. No Drawings.]

A.D. 1861, July 19.—No. 1822.

HENRY, MICHAEL. — (*A communication from Marie Anne Pelagie Veronique Cauzique.*)—"Improvements in the production of paper pulp, and in bleaching paper pulp and

“ certain fabrics, also in apparatus for cutting wood, applied for carrying out part of the invention.”

The materials, among which threads and fabrics of fibrous materials are named, are “ either bleached without first boiling,” or else they are first boiled or cooked in closed or open vessels containing alkaline liquids, as “ soda, potassa, or ammonia solutions, preferring to use the materials combined.” “ It is recommended to use about 10 per cent. alkaline salt to each boiling, and to keep up the said alkaline boiling for 12 hours.” Steam may be injected into the boilers, and the materials well washed after each such alkaline treatment. The bleaching is by one of the following methods, first, subjecting the material to a bath of about 10 per cent. of sulphuric acid for about 48 to 60 hours, washing well, adding liquid or gaseous chlorine, the chlorine may be added while the acid is acting. Or, second, after the acid and washing, subjecting the material to a salt of soda bath, “ an equal part of chlorine water being added after 24 hours.” Third, “ the material is left at rest in a carbonate of soda bath for about 6 days, afterwards adding chloride of lime, or chlorine in a nascent state.” Fourth, the materials are “ placed in an apparatus filled with the gas produced from a bath composed of 2 parts hydrochloric or muriatic acid, 2 parts water, 1 part binoxide of manganese; or of 3 parts hydrochloric acid, 1 part binoxide of manganese; or of 2 parts hydrochloric acid, 1 part manganese, $\frac{1}{2}$ part sea salt; or of 200 parts water, 100 parts acid, 100 parts manganese, 500 parts salt, adding one-half part sulphuric acid.” The material is “ left generally 8 or 12 hours in any one of these mixtures, or in any bleaching compound composed in a very similar manner, and of nearly the same proportions, and is then removed to a carbonate of soda or alkali bath, whence it is again returned to the apparatus, and in about 12 hours the bleaching is complete.” “ Hydrogen gas may also be used for bleaching.”

[Printed, 8d. Drawing.]

A.D. 1861, July 29.—No. 1893.

SCOTT, WENTWORTH LASCELLES. — “ Improvements in preparing red, purple, and certain other dyes.”

The main feature of the invention is the employment of binitro-naphthaline as a basis for red and certain other dyes. Red dye is produced by dissolving binitro-naphthaline in sulphuric acid or other suitable solvent, under an elevated temperature, with or without the addition of a small proportion of sulpho-naphthalic acid. "I then add to the solution some reducing agent, such as carbon, iron, tin, zinc, or other suitable metal or metallic salt, or, I introduce a current of sulphurous acid or other suitable gas which acts as a reducing agent until reaction is complete or nearly so." The liquid is allowed to cool, and is diluted with several times its bulk of water, to which may be added a small quantity of nitroso-naphthaline, and the whole is boiled for a few minutes and filtered. Both on the filter and in the filtrate a red colouring matter is present, which after being purified is to be used as a red dye." By other combinations various other dyes may be obtained by the agency of binitro-naphthaline, including "all dyes which are now produced from madder."

[Printed, 4d. No Drawings.]

A.D. 1861, August 12.—No. 2001.

GARZEND, ANTOINE.—"A new or improved apparatus for cutting up and reducing dye or other wood."

"I employ a tool carrier or kind of cylinder having the form of an Archimedian screw, on the projections of which cutters are fixed in any suitable manner. By imparting a rapid rotary motion to the cutting cylinder, the wood as it is fed into the cylinder will be instantly cut up;" "by augmenting or diminishing the pitch of the Archimedian screw which forms the cutter cylinder, by bringing more apart or more closely the cutters on the cylinder, the wood may be reduced either to small blocks or shavings, or chips, or into flat strips or into dust."

"The wood under operation is fixed on a carriage, which is caused to advance gradually towards the cutters by means of screw and nut. The movement of the carriage may be varied at will, and is further dependent on the movement of the cutter cylinder. The cutter cylinder may receive motion from any motive power by the intermediation of wheel-gearing, and besides its rotating movement, it may

“ have an up-and-down movement so as to raise or lower the tools for the purpose of more completely cutting up the wood. This vertical movement of the tool carrier is independent of its other movements, and is effected by hand, by turning a winch, on which is wound a cord, which supports the shaft of the cutter cylinder, which shaft slides in circular grooves cast in the frame of the apparatus.”

[Printed, 10d. Drawing.]

A.D. 1861, August 26.—No. 2127.

TOLHAUSEN, FREDERICK. — (*A communication from Jean Baptiste Théodore Rousse.*)—(*Provisional protection only.*)—“ A

“ new and economical method of producing dynamic electricity, and thereby obtaining useful chemical compounds.”

The invention relates to a new arrangement of batteries having constant and energetic currents, and yielding useful products at the poles of each element. The principle of this method is based on this theory, that the electro-motive power of a battery is proportional to the chemical action that takes place by the action of metal and an acid, which chemical action, on the other hand, is directly proportional to the caloric evolved; 1st, by the oxydation or decomposition of the metal by the acid; 2nd, by the combination of the metal or metallic oxyd with the acid used, said chemical action being inversely proportional to the absorption of caloric produced by depolarization.” The battery is formed with a metal or alloy, and either a free acid or an acid that is combined with an electro-negative metal, so as to produce a very pure salt. To produce an energetic current, such metal and acids are used “ as will give rise to a rather powerful chemical action and evolve much heat, *e.g.*, iron, zinc, lead, copper, and silver; nitric, hydrochloric acids, and chlorhydrate, sulphuric, acetic, and other acids.” The nitrous vapours given off, as in Bunsen’s pile, are absorbed by oleine or oleic acid from fatty bodies or non-siccative oils, which are thus converted into concrete elaidine or elaidic acid. “ I also sometimes absorb the nitrous vapours by means of any of the light oils drawn from tar, which are apt to combine with hyponitric acid, and may be used for producing colouring matter, such as nitro-benzine, nitro-naphthaline, nitrate of aniline, and so forth.”

[Printed, 4d. No Drawings.]

A.D. 1861, September 2.—No. 2190.

SALERES, ALPHONSE NICOLAS.—“Improvements in printing and colouring paper, chintz, and other fabrics and machinery or apparatus for that purpose.”

“To a suitable framing I connect a series of cylinders, say four, capable of revolving by toothed gearing. The foremost of these cylinders carries the fabric to be printed or coloured, and the hindermost cylinder works in a trough containing colouring matter: the surfaces of all the cylinders are in contact with each other. Over the foremost cylinder aforesaid I adapt a V-shaped trough divided into numerous compartments, the bottoms of which are open and rest upon the cylinder aforesaid, and I so connect said trough with certain mechanism as to impart thereto, when desired, a reciprocating movement lengthwise of said trough, so that supposing the fabric intended to be printed or coloured to be moving round with the cylinder on which it is placed, and end movement imparted to the divided trough aforesaid, containing the colouring matter, wavy or undulating lines or stripes of different colours may thus be produced, or one entire tint of the same colour may be spread over the surface of the fabric, and upon this or the striped coloured ground aforesaid devices, designs, or patterns may be printed of any colour through the medium of an engraved cylinder supplied with colouring matter from the hindermost cylinder before described. Or, instead of using cylinders, flat surfaces could be so arranged and actuated as to receive the colouring matters and printing impressions.”

[Printed, 6d. Drawing.]

A.D. 1861, September 9.—No. 2253.

BROOMAN, RICHARD ARCHIBALD. — (*A communication from Stanislas Vigoureux.*) — “An improved method of producing mixed coloured woollen or other threads.”

“In the spinning of filamentous substances, in order to produce mixed coloured thread, each shade or colour is dyed separately, the different coloured filaments are afterwards united and passed through preparing and spinning ma-

“ chines. Notwithstanding the greatest care to equalize the
 “ mixture of the colours, especially when they are opposite
 “ black and white, there form and remain in the thread veins
 “ or stripes different from the ground.” The invention
 purports to overcome this defect by dyeing or printing the
 filaments with “ chinage ” or marks of colours by any suitable
 means upon parts of their length in sections, and in one or
 more colours before being made into thread, prior to their
 being subjected to the operations of mixing by the ordinary
 machinery, in order to obtain a new kind of mixed thread
 suitable for manufacturing purposes. The colouring of the
 filaments “ may be effected by dyeing or printing by any of
 “ the known methods, or by any colouring process whatever
 “ that practice may suggest.”

[Printed, 4d. No Drawings.]

A.D. 1861, September 19.—No. 2333.

CONDROY, LOUIS GABRIEL AUGUSTE.—“ An improved cen-
 “ trifugal apparatus intended for purifying, washing, drying,
 “ moulding, or extracting from liquids, substances, or ma-
 “ terials of various kinds, which are deposited or poured for
 “ this purpose in moveable baskets or boxes fitted in the said
 “ apparatus.”

“ The centrifugal apparatuses used heretofore for drying
 “ yarns or fabrics, purifying sugar, washing grains or other
 “ substances of which the liquid particles must be separated
 “ from the solid ones, are generally composed of a horizontal
 “ or vertical cylinder revolving on its shaft, and in which are
 “ placed the substances which are to be purified, washed, or
 “ dried, which substances fly against the periphery by the
 “ effect of the quick rotating motion. The said substances
 “ must then be gathered from the periphery of the apparatus
 “ at intervals with greater or less labour, time, and difficulty,
 “ according to their nature.” By the invention “ the sub-
 “ stances to be submitted to the action of the centrifugal
 “ force are operated upon in mere baskets or perforated boxes
 “ lined inside, if necessary, with a woollen or common coarse
 “ cloth or else with a wire cloth.”

[Printed, 8d. Drawing.]

A.D. 1861, September 20.—No. 2351.

OLIVER, JOHN, GRANTHAM, JOHN, SINNOCK, WILLIAM, and LEVERSON, MONTAGUE RICHARD.—“Improvements in
“the mode of obtaining certain chemical substances, and in
“the treatment of vegetable fibre, and in obtaining manurial
“and other products therefrom.”

For bleaching half stuff, &c., of ordinary quality, in preference, “using a solution of chloride of lime, at any convenient temperature, either with or without the application
“of an acid to liberate chlorine.” If an acid be used, or if free chlorine be used in preference “the bleaching operation
“is performed in close vessels,” and the chlorine is conveyed
“into contact with hydrate of lime in close chambers or
“compartments similar to those used in the manufacture of
“chloride of lime,” “hypochlorite of lime and chloride of
“calcium” are obtained. “To effect a perfect bleach,” a solution of chlorine in water is used, but it is preferred “to
“bleach with a solution of hypochlorite of magnesia” obtained as follows:—Dolomite is exposed to a moderate heat and reduced to powder by grinding or otherwise; 100 lbs. of ground dolomite is decomposed with 100 lbs. of oil of vitriol;
“the soluble sulphate of magnesia is then washed out from
“the insoluble sulphate of lime,” and the solution of sulphate of magnesia is decomposed by means of a solution of chloride of lime, the sulphate of magnesia being left in slight excess.
“The hypochlorite of magnesia thus obtained is applied in
“the bleaching bath in a very dilute form.”

[Printed, 6d. No Drawings.]

A.D. 1861, September 24.—No. 2384.

FAWCETT, JAMES.—“An improved material particularly
“adapted for the scouring, cleansing, and fulling of woollen
“or other cloths.”

This invention is included in this series of Abridgments because it relates to a composition the use of which effects
“a considerable saving in soap,” and, if it be desired, dispenses entirely with its use. The material must therefore be regarded as a substitute for soap.

Iceland moss, or other moss that contains gelatinous matter, is boiled in a large quantity of water, so as to be capable of

yielding a firm jelly; or the lichen may be steamed. The jelly is rendered clear by straining it.

Another process for obtaining the jelly is to dry the lichen, grind it into a powder and add water when required for use; the whole is either boiled or steamed and then clarified.

Soda or soda ash or other alkali is then intimately incorporated with the jelly, "whereby a composition will be formed suitable for scouring or cleansing woollen or other cloths, or for other manufacturing purposes."

[Printed, 4d. No Drawings.]

A.D. 1861, September 25.—No. 2390.

BRIGHT THOMAS, and MILLS, ROBERT.—"Improvements in apparatus or means employed in the printing of yarns for carpets and other fabrics."

The invention is an improvement on No. 6307, A.D. 1832. "It has been found that under the system of printing carpet yarns at present in use" "a ridge of colour is left after each passage of the colour pulley across the yarn wound on the drum or cylinder, and it has been found necessary for the persons in attendance on the machines to scrape or rub in the excess of colour thus left so as to disperse or distribute equally the colour over the yarn," and by this means "sometimes one colour is scraped into another, thus breaking the straight line which is indispensable to a faithful production of the pattern to be printed." To remedy this defect a self-acting scraper is thus made:—"We mount upon a suitably constructed colour trough and carriage two pulleys fluted across their peripheries, and fixed in bearings one on each side of the colour pulley so as the more easily to cover and disperse the ridge of colour left by the colour pulley in its passage across the yarn; and still further to ensure the colour being spread in an equal manner, we employ a brush, fixed at each end of the colour trough and travelling immediately after the fluted pulley. Both the fluted pulleys and brushes work in and are enclosed by doctors made of brass or other suitable material and they are so constructed and arranged that when under the drum or cylinder the colour cannot spread beyond the doctors, thus leaving a correct line of colour. Both the

“ fluted pulleys, the brushes, and doctors are acted on by the
 “ springs which regulate the colour pulleys, and are elevated
 “ and depressed accordingly.”

[Printed, 10*d*. Drawing.]

A.D. 1861, October 4.—No. 2474.

STUART, JAMES.—(*Provisional protection only*).—“ Improve-
 “ ments in the treatment of oils obtained by the distillation
 “ of bones and other animal matters for the purpose of
 “ obtaining matters which may be used as pigments and dye
 “ stuffs.”

“ The process is to treat common bone oil with hydrochloric
 “ acid or a solution of sulphuric acid; then to separate the
 “ dirty acid and treat it with alkalis, when a substance is
 “ deposited which forms a brown pigment. The oil so treated
 “ is then placed in a retort with certain proportions of oxide
 “ of iron and carbonate of potash; the whole is then distilled
 “ over until perfectly dry, the product being refined bone oil,
 “ and the residuum left ferro-cyanide of potash, and may be
 “ used as such or converted into Prussian blue. The pro-
 “ portions used may be to each gallon of oil 1 lb. of hydro-
 “ chloric acid or dilute sulphuric acid; 6 oz. of oxide of iron,
 “ and 8 oz. of carbonate of potash; but I do not bind myself
 “ to the above proportions.”

[Printed, 4*d*. No Drawings.]

A.D. 1861, October 25.—No. 2672.

OPPENHEIM, SIMON.—(*Provisional protection only*).—“ Im-
 “ provements in the manufacture of printed shirt fronts.”

The invention consists in printing on calico, linen, &c., the
 middle fold and also the arrangement of the folds of the front,
 that is, the parts which are seen when the shirt is folded and
 made up, the stuff under the folds remaining plain. “ In
 “ other words, the designs are only printed on the stuff at
 “ the parts which are to form the top of the folds. The other
 “ part of the stuff has no design upon it. Thus, when the
 “ folds are formed by hand or otherwise, the whole has a
 “ regular appearance, and the white parts are not in any way
 “ altered by the effects of the transparency.”

[Printed, 4*d*. No Drawings.]

A.D. 1861, October 28.—No. 2699.

CLARK, WILLIAM.—(*A communication from Alphonse Edouard Aufray, and François Germain Léopold Tabar.*)—(*Provisional protection only.*)—"Improvements in the means of obtaining
" & producing printing surfaces."

Amongst other purposes, this invention comprises "copper-plates in which the designs are sunk in the surface for
" printing either paper or fabrics."

The printing surfaces above alluded to are blocks for typographic and other purposes in which the design is in relief, as well as the said copper plates.

The blocks or plates are formed as follows:—The design is engraved or sunk on a polished slab of slate with an ordinary graving tool. The slab is then prepared by the ordinary means and electrotyped; a block in relief is thus obtained. "Instead of engraving directly on the slate, it may be first
" coated with paint, on which the artist or engraver first
" draws, and then engraves or produces the design. The
" copper block in relief being thus obtained, another block
" may be obtained from it similar to the original design on
" the slate."

Any schist may be employed instead of slate, provided that it is not acted upon by the galvanic bath and that it is sufficiently soft to bear the action of a graver. "Plates of bitumen,
" asphalte, or similar material, may also be employed."

[Printed, 4d, No Drawings.]

A.D. 1861, November 4.—No. 2764.

BOWDEN, JOSEPH.—(*Provisional protection only.*)—"Improvements in dyeing and apparatus employed in dyeing."

"In performing my invention I employ a vessel provided
" with a perforated column through the centre, and with a
" grate near the bottom on which the fibrous materials to be
" dyed "are placed. This vessel is connected by pipes to
" the vessels containing the mordant, the fixing liquor or the
" dyeing mixture, and all the vessels are connected to a steam
" pipe. When the articles are placed in the first vessel, and
" the lid or manhole has been secured, the mordant is forced
" from the vessel containing it into the articles to be operated
" upon; after the mordanting is finished, the mordant is

“ forced back again into the vessel from whence it was taken.
 “ The mordant is then fixed by forcing the fixing liquor into
 “ the first vessel, and the ingredients which I prefer to
 “ employ for fixing colours in cotton goods or fabrics are
 “ the silicates, arseniates, and phosphates of soda, but any
 “ other suitable ingredients may be employed. After the
 “ process of fixing, the articles under operation may be
 “ washed or not washed, and then the drying mixture is
 “ forced into the first vessel until the process of drying is
 “ completed. In all cases the mordant, the fixing liquors,
 “ and the dyeing materials circulate through the articles in
 “ the first vessel as long as may be requisite.”

[Printed, 4d. No. Drawings.]

A.D. 1861, November 7.—No. 2801.

BARROW, JOHN.—“ Improvements in the manufacture of
 “ benzole, naphthaline, aniline, and carbolic acid.”

The invention consists in treating coal directly, so as to
 obtain these products, which have theretofore been obtained
 from gas tar.

The coal is placed in stills, which are gradually heated to a
 bright red, and the vapours collected and condensed “ by any
 “ of the well-known means.” The crude oils or products
 having been partially rectified by distillation in ordinary
 stills, are placed in a boiler connected with a condensing
 apparatus. Jets of steam are then blown in, when a certain
 portion of the oils, distil over, leaving the less volatile parts
 in the boiler. The lighter distilled portion is a mixture of
 several hydrocarbons, and constitutes crude mineral naphtha
 containing benzole. The crude naphtha is then rectified by
 means of acids and alkalies, or alkaline earths, and after their
 application again distilled by steam. The portion which
 distills over at or below 212° Fahrenheit is collected apart.
 It contains the crude benzole. “ To obtain aniline and car-
 “ bolic acid, I treat the crude oils of the first distillation with
 “ mineral or vegetable acids, which unite with the aniline and
 “ separate it from the other oils, and the remaining oils I
 “ treat with alkaline solutions, or solutions of alkaline earths,
 “ which unite with the carbolic acid, and separate it from
 “ the remaining oils. From the acid solution of aniline and

“ the alkaline solution of carbolic acid, I then separate these
 “ two bodies, and afterwards purify them. The remaining
 “ oils, after the separation of aniline and carbolic acid, are
 “ neutral oils, which I distil by means of a jet of steam to
 “ obtain the naphtha and benzole which they will contain.”

[Printed, 4d. No Drawings.]

A.D. 1861, November 12. —No. 2837.

DAVIES, GEORGE.—(*A communication from Edouard Turpault.*)
 —“ Improvements in bleaching cotton and other textile fabrics
 “ and materials, and in the apparatus employed in such pro-
 “ cess.”

The process consists principally in submitting the material to be bleached to all the operations of bleaching in the same vessel. The apparatus employed consists of four vessels or reservoirs, arranged side by side, and containing the different baths, viz., the alkaline or lye bath, the soap bath, the acid bath, and the chloride bath, the two former being furnished with steam pipes for heating the contents. In front of these reservoirs, and upon a lower level, is the vessel in which are placed the materials to be bleached. Each of the reservoirs is furnished with a tap, by means of which its contents may be discharged into the bleaching vessel. The latter is provided with a perforated false bottom, the space below which communicates with a force pump, by means of which the baths, after being used, are returned to their respective reservoirs. The bleaching vessel is also furnished with a discharge cock. This vessel is open at the top, and is furnished with a circular perforated wooden cover, which may be raised and lowered at will, and above the same is the pipe from the cold water supply, which is furnished with a stop-cock having a perforated nozzle or nose for distributing the water.

[Printed, 8d. No Drawings.]

A.D. 1861, November 12.—No. 2842.

TONGUE, WILLIAM.—“ Improvements in the manufacture of
 “ printed yarns, and in the application of certain fibrous
 “ materials to the manufacture of certain descriptions of yarns
 “ and threads.”

The invention consists :—

1st. In printing in one or more colours, slivers, slubbings, or rovings of fibrous materials, such slivers, &c., being afterwards drawn out into yarns by ordinary machinery, when the colours printed on the slivers, &c., will be “mingled” together and form a marled or mottled yarn of an improved “character.” 2nd. In the application to the manufacture of mixed yarns, mixed coloured or mottled yarns, and mixed twisted or doubled yarns of fibres of certain tropical plants. 3rd. In the application to the same manufacture, of fibres obtained from the pods of certain plants and trees. 4th. In the manufacture of knitting yarns, sewing threads, and “Gwynappe and heald yarns” of certain fibres. 5th. In the application to the manufacture of knitting imitation woollen yarns of the “noil” or refuse produced from the combing of certain fibres. 6th. In printing in one or more colours, yarns, single or double, produced from the above-mentioned fibres such yarns being capable of being printed so that when arranged in a warp they shall form a pattern.

[Printed, &c. No Drawings.]

A.D. 1861, November 27.—No. 2983.

LECK, WILLIAM.—(*Provisional protection only.*)—“Improvements in weaving, printing, and otherwise treating certain ornamental fabrics.”

In weaving “crimped” goods, in which crimped or full stripes running the long way of the cloth alternate with scant or plain stripes, the latter are made single-fold instead of two-fold as heretofore. To make the band single-fold, and scant or short, as compared with the crimped parts, the warps composing it are shed so that two or more weft threads are laid in each shed, each shed being kept open, or being repeated for two or more shots, whilst the shed of the warps for the crimped parts is changed for each shot. “In printing fabrics woven in this way, according to one modification, provision is made for printing a device on the plain or band portion, only the crimped parts being left unprinted, and this may be effected by blocks or by rollers. The crimped parts may also be printed upon by means of printing surfaces, shaped to suit the distended and unequal surface of those parts, and when they are printed the band parts may be printed

“ also, or may be left unprinted. By these means various combinations may be made so as to obtain numerous different ornamental effects of novel character.”

[Printed, 4d. No Drawings.]

A.D. 1861, December 2.—No. 3021.

SCHULTZ, ALEXANDER.—(*Provisional protection only*).—“ Improvements in the manufacture of certain colours for printing and dyeing fabrics.”

The invention consists “ in the employment of a decoction of logwood, combined with caustic soda, for producing different shades of black, chocolate, olive, and other colours, upon cotton, wool, silk, and other fibres. The mordant which I employ for fixing the colours prepared by combining logwood and caustic soda, consists of a mixture of acetate of lead and acetate of tin, but alum and the stannate of soda, or the various salts of tin, may be employed.”

[Printed, 4d. No Drawings.]

A.D. 1861, December 4.—No. 3046.

HARTOG, CHARLES SAMUEL HENRY.—“ Improvements in the preparation and treatment of vegetable fibres the better to adapt them for combining working up and dyeing with different fibres, such as silk, wool, cotton, and others, and in apparatus used in such treatment or preparation.”

1st. Producing and preparing vegetable fibres of a silky and woolly nature suitable for admixture, and working up with animal wool and hair, shoddy and mungo wools, silk, cotton, and other fibres obtained from the plants known as the rheaa ranee, bon sunn, jute, Indian flax and hemp, aloes, plantain, pine apple, Indian and other nettles, leaves of grasses and trees, and other vegetable products.

2nd. “ The employment of these products in spinning and manufacturing all kinds of woven fabrics or any other applications in which animal wool, hair, shoddy, and mungo wools, silk or cotton are employed, either by using it alone or in any other combinations.”

3rd. The use of such chemical agents and such mechanical apparatus as will entire remove all resinous, ligneous, and

“ other matters from such vegetable fibres so as to cleanse
 “ and bleach them, and prepare them to take perfectly dyes
 “ of all colours and with any admixture of wool, silk, cotton,
 “ or other materials.”

The fibres are prepared (after undergoing the processes of retting, scutching, hackling, &c.) by boiling, cooling, and washing them, and afterwards exposing them in a boiling state to the action of a lye of salts of soda or other analogous chemicals of the strength of about $2\frac{1}{2}^{\circ}$ to 4° Beaumé's lye meter. They are then washed and put into a lukewarm soap bath, and after remaining for 20 or 30 minutes in such bath, washed, rinsed, and dried. If the fibres are to be prepared for light colours, they are then submitted to a bleaching bath (3 lbs. of chloride of lime to 150 lbs. of fibre). In order to mix the fibres with hair, wool, &c., they must be cut after the washing process into lengths the same as that of the wool, &c., “ and
 “ then be operated on by the usual and appropriate machinery
 “ employed for the production of slivers for spinning and
 “ weaving, or for the production of any other fabrics.”

[Printed, 4d. No Drawings.]

A.D. 1861, December 5.—No. 3055.

HENRY, MICHAEL.—(*A communication from Alexandre Adrien Despréaux.*)—“ Improvements in printing and ornamenting
 “ textile fabrics, paper-hangings, and other materials, and
 “ in surfaces and apparatus for such purposes.”

By this invention, among other results, figured effects may be produced “ imitating the embossed or raised effects obtained
 “ by Jacquard machinery, and by tapestry or needle-work.” The device or design is cut out sharply on a plate or slab in the manner of open work, portions being left to serve as connections for keeping the parts of the device together; it is then mounted. The mount-plate is then fastened down to a block of marble or other like hard material, or the device may be similarly produced on a cylindrical surface. “ The colours
 “ are applied by rollers or otherwise upon the raised parts or
 “ reliefs of the printing or figuring surfaces, so that those
 “ parts imprint the colours while the hollows serve as the
 “ blanks or spaces.” They consist of metallic oxides or lacs pulverized and mixed with unctuous oils or varnishes, but

without acid mordants. In the printing machinery employed, the printing blocks or surfaces, instead of being fixtures on the table, are free to travel on or off it, so that, after having impressed the device on the material, they are free to return and repeat it. Two modes of carrying out this principle are described. "The pattern surfaces may receive their colours among other modes by pressure upon travelling plates or tables brought back after doing their work to commence it afresh. A device may be printed in different colours by using printing surfaces with different colours and by having a number of plates or surfaces on which different colours are applied, and which are duly arranged or brought into proper register."

[Printed, 8d. Drawing.]

A.D. 1861, December 7.—No. 3075.

MELLODEW, THOMAS, KESSELMAYER, CHARLES WILLIAM, and WORRALL, JOHN MAYO. — "Improvements in dyeing and printing certain descriptions of woven fabrics."

The invention is a sequel to No. 1547 of 1861, according to the Provisional Specification, of which "the said method was stated to be applicable only to velvet, velveteens, cords, and other such fabrics, and these are ordinarily cut so as to open the floated threads, but since the filing thereof we have discovered that the said method is applicable to such fabrics with a silk face and cotton or linen back, or substantially so as are not intended to be cut, but which may, if desired, be raised so as to form a plush or nap, although we do not confine ourselves to such raising as all goods with back and face as aforesaid which are manufactured so as to be capable thereof will be benefited by our improvements. We propose now, therefore, and as applied to such fabrics as aforesaid, to apply the solution of iron or other mordant used for the dyeing or printing to the back of the fabric by the process known as padding," the subsequent washing out in water conveying sufficient of such mordant washed out of the back to the silk face of the fabric either with or without a slight addition to such mordant, according to the shade of colour required.

[Printed, 4d. No Drawings.]

A.D. 1861, December 9.—No. 3081.

MENNONS, MARC ANTOINE FRANÇOIS.—(*A communication from François Debons and Théobald Denny.*)—(*Provisional protection only.*)—"Improvements in the production of relief designs on "metallic surfaces for general printing, gaufering, and embossing purposes."

Among other applications of this invention, printing on woven fabrics is mentioned.

The preparations by which these processes are carried out are:—1. A white varnish containing benzine, caoutchouc, oil of naphtha, turpentine, and zinc white. 2. A ground protecting solution containing wax, turpentine and naphtha. 3. A clearing solution composed of naphtha or petroleum and sulphuric ether saturated with wax. 4. A ground coating containing tallow, wax, and lampblack. 5. An electro-depositing bath of cyanide of copper. 6. A cleansing paste composed of Venetian tripoli and alcohol or sulphuric ether. 7. An electro-etching bath for zinc plates containing sulphate of zinc and nitrate of ammonia. 8. A mineral ground coating of paste composed of zinc or lead white, chrome, yellow or powdered lithographic stone and water or alcohol. 9. An adhesive compound of wax, bitumen, and tallow. 10. An etching solution of dilute sulphuric or hydrochloric acid. 11. An electro-chemical etching solution containing sulphates of copper and iron, together with sulphuric, nitric, and acetic acids. 12. A protecting coat for blanks composed of wax, tallow, and colouring material.

The design is traced upon the zinc plate, coated with varnish No. 1, the ground is protected, the unprotected lines are filled up by electro-deposited copper and the plate is electro-etched. The etched surfaces are then covered leaving the relief lines to be coated with an adhesive compound and the etched surfaces to be again exposed. Powdered resin is sprinkled on the waxed reliefs, the resin is liquefied and the unprotected grounds are etched.

Modifications of the above process, for various metals, are duly set forth.

[Printed, 4d. No Drawings.]

A.D. 1861, December 13.—No. 3131.

GIBSON, THOMAS BOW.—"A new or improved method of "ornamenting certain fabrics."

The invention relates "to the production of a new ornamental fabric, and consists in applying coloured designs, either by the aid of block or cylinder printing to harness curtains and other figured fabrics of that class. The designs which may be printed in various colours upon the fabric, may either differ from the pattern woven into the fabric and be applied both to the ground and patterns alike, or they may be of precisely the same design as the woven patterns, and applied only to the patterns so as to leave the ground enclosed." The printing is effected "by ordinary blocks, or by the printing machines which are used in printing textile goods." The colours used are fast colours. Light "magenta" is made by adding 4 lbs. of albumin to 1 gallon of water; for dark "magenta" six parts of the albumin solution are added to one part of the liquid known as "Sampson's magenta." "For preparing the violet tints known as mauves and also the various tints of green, the same proportions of albumen liquor or nearly so are added to the colouring solutions. Dark blue is prepared by adding 4 lbs. weight of ultramarine blue to 1 gall. of the albumen liquor. A pale blue is obtained by mixing 1 lb. weight of the ultramarine with one gall. of the albumen liquor. Other tints of colour may be prepared in a generally similar manner."

[Printed, 4d. No Drawings.]

A.D. 1861, December 20.—No. 3195.

D'ALMEIDA, Vasco.—(*A communication from Edward Smith.*)—(*Provisional protection only.*)—"An improved mode of obtaining colouring matter applicable for dyeing skins, silk, wool, and other fibrous materials."

The invention consists in extracting colouring matter from a mollusc known as the *Aplysia*, an animal of the fourth order of the Gasteropoda family. "I take several of these animals, and by exerting pressure thereon, extract a liquid colouring matter therefrom," "and impart heat thereto of about 50° Fahrenheit." "To said colouring matter I add water, varying in quantity according to the tint or depth of colour required, and varying from lead colour to purple. By these means I obtain colours suitable for dyeing skins, silk, wool, and other fibrous materials without requiring to use mor-

"dants as heretofore practised by dyers. I also obtain a rich colour resembling that hitherto obtained by the use of cochineal, indigo, and carmine, thus effecting great economy in the mode of obtaining colouring matter suitable for dyeing."

[Printed, 4d. No Drawings.]

A.D. 1861, December 20.—No. 3199.

PEREAU, EUGENE ETIENNE.—(*A communication from Alfred Thomas.*)—"An improved composition for cleaning and re-vivifying woollen cloths and other fabrics, and the colors thereof."

This composition consists of "citric acid, 4 parts by weight; carbonate of potash, 8 parts by weight; alum, 1 part by weight; alcohol, 1 part by weight; water, 100 parts by weight." These proportions have been found to answer well, but they may be varied and "other acids or acid salts such as oxalic acid, tartaric acid, cream of tartar, nitric acid, sulphuric acid, salt of sorrel, or other acid capable of producing the same effect, may be substituted for the citric acid in the composition of the 'eau écarlate.'"

[Printed, 4d. No Drawings.]

A.D. 1861, December 20.—No. 3203.

LE SOUËF, DUDLEY CHARLES.—(*A communication from Henry Kündig, George Bertschy, and Joseph Forges.*)—"An improvement in cylinders used in printing calicoes and other textile fabrics."

The invention consists in electroplating cast-iron cylinders with copper. The copper surface thus produced is then engraved with the desired pattern "and used in place of the solid copper rollers hitherto employed for printing calicoes and other textile fabrics. The advantages of these rollers, in addition to the great economy of production, consists in the purity of the copper, which renders it particularly well adapted for engraving and etching, the design being more permanent than on the less perfect surface of the ordinary copper rollers. When the rollers are turned for the purpose of preparing them for a new design, they can be maintained at exactly the same diameter by giving them a new coating of copper at a trifling expense."

[Printed, 4d. No Drawings.]

A.D. 1861, December 24.—No. 3225.

LAURENT, FRANÇOIS, and CASTHELAZ, JOHN.—“Improve. ments in the manufacture of colouring matters.”

“For this purpose we take nitro-benzine, or nitro-toluine or other homologue of nitro-benzine, or a mixture of these substances, or a substance containing some or one of them, and by a process of deoxidization we obtain a red colour, varying somewhat in shade according to the method in which the deoxidizing process is conducted, and the extent to which it is carried. The deoxidizing process, which we prefer, is to mix with the nitro-benzine or other material iron filings and hydrochloric acid; but in place of iron and hydrochloric acid some other metals and acids or some salts, as, for example, zinc and sulphuric acid may be employed. The colouring matter when formed may be purified by dissolving it in water and precipitating it by saline solutions.”

[Printed, 4d. No Drawings.]

1862.

A.D. 1862, January 20.—No. 147.

NICHOLSON, EDWARD CHAMBERS.—“Improvements in the preparation of colours suitable for dyeing and printing.”

“Producing a violet or purple colour from red dye, such as is made from aniline or its homologues, by carefully heating it,” without admixture either of aniline or its homologue,” in “a suitable apparatus to a temperature by preference between 390° and 420° Fahrenheit.” “The substance quickly assumes the appearance of a dark semisolid mass,” ammonia being evolved. The mass, in preference, is afterwards treated with “a quantity of acetic acid about equal in weight to the amount of the red dye treated,” by which the dye is extracted, and this acid solution is diluted “with enough alcohol to make a dye of convenient commercial strength,” which “may be used directly for dyeing purposes.”

[Printed, 4d. No Drawings.]

A.D. 1862, January 27.—No. 204.

SMITH, WALTER, and TIESSET, CASIMIR.—(*Provisional protection not allowed.*)—"Improvements in the manufacture of "colours for dyeing and printing,"

Applying "an essential or volatile oil or liquid produced by "a distillation or preparation of oily, fatty, oleaginous, or "saponaceous matters to the manufacture of colours for dyeing "and printing." This oil it is said, "when acted upon by certain chemical reagents, forms an organic basis by which "the requisite colours or shades of colours are produced." "This organic basis" however produced "is applied either "alone or in combination with other materials to the manufacture of colours."

[Printed, 4d. No Drawings.]

A.D. 1862, January 27.—No. 208.

HARRISON, CHARLES WEIGHTMAN. — "Improvements in "printing, stamping, embossing, perforating, and other like "operations, and in the machinery or apparatus employed "therein."

In the case of the printing press, the tympan, when brought into its proper position over the printing surface, "is drawn "forcibly down to give the required printing pressure by "means of suitably disposed electro-magnets or electro-magnets and keepers or coils of conducting wire." The drawing shows an arrangement in which the platten is mounted on an axis between two forms of type, and when the platten is brought down upon the inked form, the electro-magnets become excited and impress the paper which has been previously placed on the said form; the other form is then inked, the platten turned over, and the paper thereon impressed in a similar way, and so on. Instead of the above described arrangement, two plattens, connected by chains and working in guides, may be used.

Inking rollers are mounted at the extremities of arms, connected with an axis, which is made to turn when required by means of armatures at the extremities of other arms, the said armatures being moved by means of fixed electro-magnets, so as to force the rollers against the printing surface. By this arrangement "impressions in a great variety of colors may

“ be produced with great rapidity.” “ A similar arrangement may also be used in the process of block printing for fabrics.”

[Printed, 10d. Drawing.]

A.D. 1862, February 10.—No. 342.

BUSFIELD, JOHN, and EASTWOOD, JONATHAN. — (*Provisional protection only.*) — “Improvements in machinery or apparatus for preparing wool for dyeing and spinning.”

“This invention relates to means of producing uniformity of twist in slivers of wool preparatory for the dyeing process, and also for taking out the twist of slivers of wool preparatory for drawing and spinning.” “The apparatus consists of suitable framing, on which are mounted two pairs of nipping rollers for drawing the sliver forward from the ball, which is placed in a receptacle or cylindrical vessel mounted centrally upon a vertical spindle, to which variable rotary motion is given by means of a friction wheel applied to the bottom of the vessel, which forms a friction plate. This friction wheel is capable of sliding on a shaft by which it is driven, and receives rotary motion through a train of gearing from the drawing rollers. The said friction wheel is moved to or from the spindle or centre of the cylindrical vessel by a rod connected to a stud, plate, or crank fixed on a shaft, to which rotary motion is also communicated by the gearing, and which is so arranged as to produce or give any desirable variation of speed to the vessel. A ball of sliver is placed in the vessel, and the inner end of the said sliver is passed through a central hole in a portable rail placed across the top of the vessel, and thence betwixt one of the pairs of rollers to the other pair, which draws it forward at a uniform speed. If it be required to produce twist in the sliver, then the friction wheel is placed or arranged so as to act upon the outer part or edge of the plate or bottom of the vessel, at the commencement giving a slow motion thereto, which gradually increases as the friction wheel moves nearer to the centre of the plate. The variation in speed is regulated according to the increasing interior diameter of the ball as the sliver is drawn out therefrom, and as the sliver is delivered from the rollers it is wound upon a swift or reel which receives motion from the

“ rollers. If it is required to take the twist out of such slivers
 “ then the friction wheel is placed nearest to the centre of the
 “ plate at the commencement, thus producing a quick rotation
 “ of the vessel, and slides outward from the centre as the
 “ sliver is drawn from the interior of the ball, the speed of
 “ the vessel diminishing in proportion, and the sliver passed
 “ from the rollers into a can ready to be taken to the next
 “ machine or process.”

[Printed, 4*l.* No Drawings.]

A.D. 1862, February 24.—No. 492.

KIRKHAM, THOMAS NESHAM, and ENSOM, VERNON FRANCIS.
 —“Improvements in bleaching and dyeing yarn and thread
 “ when in the form of cops or otherwise wound.”

“Causing the liquids or liquors employed for such purposes
 “ to be forced or caused to pass from the interior outwards,
 “ and from the exterior inwards,” as follows:—“Hollow tubes
 “ in the form of spindles closed at the smaller ends are intro-
 “ duced into the cops, these tubes are perforated with numerous
 “ holes or passages suitable for the free passage of the
 “ bleaching or dyeing liquor or cleansing or washing fluid.”
 “The liquid may after having been pressed through the tubes
 “ in a direction from the interior outwards, be then drawn
 “ back by the open ends of the perforated tubes being put in
 “ connection with a suitable pump.”

[Printed, 1*s.* 2*d.* Drawings.]

A.D. 1862, February 26.—No. 521.

DOTHÉE, JACQUES.—(*Provisional protection only.*)—“Improve-
 “ ments in the colouring or dyeing of horse-hair tresses, hats,
 “ or ornaments.”

Using vegetable or mineral colours, mixed up or diluted
 with spirits of wine, collodion, or other suitable rapidly
 volatilizing menstruum or a mixture of two or more of such
 menstrua. “For colouring or dyeing, for instance, a horse-
 “ hair hat, the same is put in the usual manner on the block,
 “ and then rubbed all over with a brush dipped into a solution
 “ or mixture of the pigment with spirits of wine, or other
 “ suitable rapidly vaporizing menstruum.”

[Printed, 4*l.* No Drawings.]

A.D. 1862, March 4.—No. 587.

STANDEN, BRIDGE.—“Improvements in the preparation or manufacture of portable manure or fertilizing compound, and in the collection or extraction therefrom of a certain liquid applicable to various purposes, and also in machinery or apparatus to be employed therein.”

“The excrementitious matters are collected in boxes and conveyed to the works in a covered van” and emptied into store tanks, on the second floor, a number of which “are connected together by a pipe which leads to a preparing or neutralizing tank, and conveyed from thence into a series of stills fixed on the first floor which can be put in operation either separately or combined. Each of the said stills is provided with an agitator, and the contents after distillation are removed by pipes to the evaporating pans on the ground floor, from whence they are passed to mixing machines for the purpose of mixing the said contents with ashes prepared in the following manner.” The ashes and cinders being collected in as dry a state as possible are passed through a series of sieves on the second floor, “the fine dust thus collected is ready for use.” To collect the liquid the steam or vapour from the stills is passed “through a number of pipes surrounded with cold water, thus condensing it into a liquid which is collected in suitable vats or vessels. This liquid is very valuable and may be advantageously employed for all purposes where grease has to be neutralized for all cleansing and scouring purposes, mordanting processes, for the washing department of the laundry, for hair and sheep wash, for clearing the colors of printed goods, washing plants, irrigating land, exterminating insects upon the hop plant, vine, and other fruit trees and many other useful purposes.”

[Printed, 1s. 8d. Drawings.]

A.D. 1862, March 13.—No. 700.

KENT, JOHN.—(*Partly a communication from Theodor Schnebely.*)—“Improvements in cleansing and bleaching.”

It has been usual in bleaching yarns or fabrics “to employ milk of lime or milk of lime and soda, and then to boil therein for several hours; it is here proposed to submit

" yarns or fabrics to the following process : "—Lime and soda are mixed (in the proportion of about 2 lbs. of carbonate of soda to 1 lb. of lime) with water, and allowed to stand or settle, when the clear liquor is drawn off or separated from the solid matters. The solution should mark about $1\frac{1}{2}^{\circ}$ to $2\frac{1}{2}^{\circ}$ of Twaddell's hydrometer. For fine light goods $1\frac{1}{2}^{\circ}$ is found sufficient, for heavier goods a greater strength is required. The goods are steeped in this liquor for from 30 to 50 minutes, more or less, as the case may require. "The process of cleaning and bleaching is then finished in the ordinary manner by washing, and then treating the fibrous materials with dilute sulphuric or muriatic acid and chloride of lime as heretofore." When the fabrics are to be dyed with madder or "madder bleached," the fabrics after steeping as above, are boiled for two or three hours in a solution of carbonate of soda and resin, it being preferred to use a solution somewhat weaker than has heretofore been employed."

[Printed, 4d. No Drawings.]

A.D. 1862, March 17.—No. 731.

MONGRUEL, LOUIS PIERRE. — "An improved cold vapor generator, which may also be used in the carburation of illuminating gas."

This generator consists of a metal or other suitable vessel cylindrical or otherwise, and of any suitable dimensions, divided so as to form two chambers, one above the other; the upper one is a reservoir of volatile liquid filled from above, which feeds "continuously and regularly (through a tube with stop-cock and floating valve), a thin layer or sheet of liquid spread on the bottom of the lower compartment," provided with a number of "vertical wicks passing through the meshes or rings of two superposed metal discs, and steeped at bottom in the before-mentioned sheet of liquid which rises along them by capillary attraction." The feeding of the sheet of liquid is through a descending tube above mentioned, and if of moderate diameter, will of itself maintain the sheet of liquid in the basin at one constant level, but if too small to allow the air or gas "to rise within it by the side of the liquid passing downwards, a second tube will be necessary to cause air or gas to rise from the lower chamber and assist the flow of the liquid required to replace that which has

"been used by evaporation." This tube or these tubes may be used interiorly or exteriorly. The upper chamber is hermetically closed. Two conduits are added to the apparatus exteriorly or interiorly for the introduction of the current of gas into the basin in the middle of the vapour and its subsequent exit to the establishment to be lit, and so made that the gas or other pipes may be easily fitted to them. The gas to be charged with carbon "is taken at will from the meter, "introduced from the right or left into the vapor chamber, "amidst the assemblage of capillary wicks, which it is forced "to traverse, and issues in front after having partially licked "and dried the wicks." Besides the carburation of gas, the generator "may be usefully employed for chemical operations "in which it is desired to react in a vaporous or gaseous state "upon two or more bodies unattackable the one by the other "in a liquid state." It is also stated that the generator "will "advance the manufacture of colours, their application in "dyeing or other application."

[Printed, 10d. Drawing.]

A.D. 1862, March 19.—No. 768.

BROOMAN, RICHARD ARCHIBALD. — (*A communication from Rosalie Clémentine Tillard.*)—"Improvements in reproducing "or in producing copies of Guipure lace, embroidery, and "other like articles."

This invention consists in producing stereoplates of the designs that are afforded by the above-mentioned articles. "The process followed consists in principle in making the "object to be reproduced serve itself for its own reproduction."

1st. The "direct transfer."—The lace is soaked in a fatty liquid, spread out upon a zinc plate, and the whole is treated with an acid. The result is that the parts of the plate "covered "by the threads of the lace present in relief the pattern of the "lace."

2nd. The "indirect transfer."—A transfer composition is spread over an even surface and lace is imbued therewith by pressure, paper and cloth being used to equalize the pressure. Unsized agglutinated paper is then placed on the lace, and a soft material upon it; pressure is then applied. The composition on the lace is thus transferred to the agglutinated

paper, and the design is thence transferred by pressure to a zinc plate, which is dried, gummed, washed, damped and coated with a composition containing lamp-black, oil, and "Zumic siccative," besides a little of the transfer composition. The design is powdered with resin and the non-protected parts are bitten out, giving a design in relief. The transfer composition contains bitumen, tallow, wax, resin, gum lac, linseed oil, benjamin, soap, caustic potash and liquid nitrate of silver.

Modifications of the second process are set forth.

The stereoplate in relief may be fixed on cylinders and "used instead of the heavy and costly engraved cylinders now used in printing."

[Printed, 4d. No Drawings.]

A.D. 1862, March 21.—No. 783.

KAY, ROBERT.—"Improvements in the method of printing
"calico and other surfaces, and in apparatus connected
"therewith."

First, "forming or constructing rollers in cylindrical layers
"of gutta percha or other suitable material not subject to
"injurious contraction and expansion." Among those substances named are also "paper, papier maché, india-rubber, vulcanite, plaster of Paris, glue, hide."

Second, "the employment and use of a surface of india-rubber to fill the interstices of the pattern or parts of it" in relieve, "as a substitute for felt, such surface being so formed
"as to enable it to retain the colouring matter and to permit
"of the discharge of the color upon the application of
"pressure." When the blank roller is prepared with a thin layer of gutta percha "the design is to be outlined with
"wire as is usual, or to have type metal inserted in its circumference, and the gutta percha or other material outside
"the wire or cast is to be cut away and the thin upper layers,
"which is easily detached, is to be removed from within the
"design; and the interstice to be filled up with the surface
"of india-rubber instead of felt," in some cases above the wire or cast in others level with the same, "according to the
"texture of the fabric to be printed." Three forms of india-rubber surfaces are described, one "being grooved at an
"obtuse angle parallel to the axis of the roller, which grooves
"are again subdivided at right angles," another "being

“square in form, the sides converging to a point at the bottom, and the tops of the walls or sides being grooved or channelled,” and the third is “an extension of this form, having similar indentations upon the obverse corresponding with elevations on the reverse, and the points or lines terminating or bounding each square may be pierced,” and if so, secured on a foundation of india rubber, &c. The india-rubber surfaces are firmly granulated to enable the colour to adhere thereto.

[Printed, &c. Drawing.]

A.D. 1862, March 29.—No. 871.

KAY, ROBERT. — (*Provisional protection only.*) — “Improvements in printing calicoes and other surfaces, and in apparatus connected therewith.”

These improvements relate to “sieves” “now used by block printers to supply the colouring matter, and consist in adopting such apparatus to cylinder printing particularly,” but it may also be applied to various descriptions of printing. The “sieve consists of an internal cylinder having an internal covering of india-rubber or other elastic substance, so as to form a cavity or chamber between the two,” this cavity is “supplied by tubes with water or other liquid from a cistern, and the pressure only regulated by valves; the surface of the india-rubber may either be corrugated or covered with woollen or other fabric.” “If the water pressure be not sufficient to prevent the india-rubber covering ‘bagging’ it may be confined by small parallel rods or tubes to distribute the pressure more evenly.”

[Printed, &c. No Drawings.]

A.D. 1862, April 4.—No. 959.

MOULTON, GEORGE. — “Improvements in pentagraph machines used for tracing or engraving rollers or cylinders employed in printing calicoes and other surfaces.”

First, “the employment of a circular or segmental tool holder, held in two parts, and having an external, internal, or side mortice, in order to enable the points or cutting tools to be freely moved round to any part of the holders, and thereby allow any part of the circumference of the

"cylinder roller to be traced or engraved upon, and also the employment of a small intermediate lever for enabling the weight which gives pressure to the points or cutting tools to be turned round and adapted to any part of the circle."

Second, "the separation of the bars or supports which carry the tool holder, so that they may be parted asunder, and thereby enable the separated parts to be traced in opposite directions for the purpose of reversing the pattern."

Third, raising and lowering the table which carries the pattern "plate instead of having it stationary, as at present, for the purpose of regulating or adjusting the length of the levers from the cylinder to the pattern plate, and thereby enabling the sketch to be adapted to any slight differences required on the cylinders."

Fourth, in forming slots in the vertical arms or levers so that "different lengths of the bracket that carries the tracer carriage and its bar, and also the shaft that carries the ratio pulley for the purpose of altering the diminutions" may be employed.

[Printed, 1s. 4d. Drawings.]

A.D. 1862, April 19.—No. 1147.

PARKES, ALEXANDER.—"Improvements in the manufacture of rollers for surface printing and embossing."

"In surface printing on woven fabrics by means of rollers it is common to employ massive rollers of copper mounted on a shaft or mandril, and recently in many cases an iron roller or 'liner' as it is called, with a tube or 'roller' of copper forced on to it has been substituted for a roller entirely of copper." In either case such roller is extremely heavy, more especially when of the larger sizes, as with the exception of the hole for the mandril they are made perfectly solid. It is now proposed "to cast the 'liner' or inner roller hollow interiorly so that it then fits the mandril only at each end, or if greater strength is required a central bearing surface may also be provided." The liner is made of cast iron or, preferably, of cast steel, if low in price. When the 'liner' fits upon the mandril, in some cases, it is bushed "by preference with copper or brass." The roller is secured "on the mandril by means of a solid 'nib' or pro-

“jection left on the side of the hole through which the mandril passes, this nib enters a recess or keyway cut for it in the axis.” “When the ‘liner’ is bushed with copper or brass the nibbing may be effected by a machine similar to that commonly employed in nibbing copper rollers; but when the liners are not so bushed,” the nib is formed “by means of a machine, of which the cutting tool rises and falls vertically in the manner of a slotting machine, as the machine ordinarily employed for nibbing copper rollers will not cut iron efficiently.” This mode of making rollers “will be found very advantageous in producing the large rollers known as handkerchief rollers,” also rollers “are so made for embossing fabrics, leather, &c.”

[Printed, 8d. Drawing.]

A.D. 1862, April 23.—No. 1184.

HODGKINSON, ALFRED.—“A mixture or composition to be used in the process of boiling, preparing, or bleaching vegetable substances, whether they are in the manufactured or unmanufactured state, which mixture may also be used in the manufacture of soap.”

As a substitute for rosin, which has been long used along with an alkali, in boiling goods, using “an empyreumatic oil such as petroleum, or rock oil, paraffine, or any essential oil of wood, coal, or stone,” any or all of which are “both beneficial and effective,” but from experiments preferring “petroleum or rock oil” as the most effectual and the cheapest. “The first boil” in which the petroleum is used “is termed the lime boil, that is prepared with milk of lime in the usual way for 2,500 lbs. to 3,000 lbs. linen fabrics or yarns,” using “from 1 to 1½ gallons of the oil (according to the quality of the cloth to be boiled), heavy strong fabrics requiring stronger alkali and more petroleum than the finer and lighter qualities,” and boil, &c., in the usual manner. A liquor is then prepared of caustic soda or common soda ash of commerce of 2° to 4° Twaddell’s hydrometer, varying the strength according to the quality of the fabric to be operated upon, to which liquor is added two or more gallons of the oil. Boil successively for 12 or 14 hours, after which “give more alkali boils, if necessary, either with or without petroleum, and afterwards proceed to whiten and bleach out the cloth

“ in the usual way.” “ For cotton fabrics 25 to 30 per cent. less of both alkali and petroleum” is found to be sufficient for a boil of the same weight of cloth as above mentioned. “ The mixture may be used as a soap if required, or it may be added to the alkaline (rosin) and fatty matters ordinarily used in the manufacture of soap.”

[Printed, 4d. No Drawings.]

A.D. 1862, May 3.—No. 1317.

HENRY, MICHAEL. —(*A communication from Jean Baptiste Vasseur and Xavier Lamotte.*)—(*Provisional protection only.*)—

“ Improvements in the process of and apparatus for preparing materials for the manufacture of paper, and in obtaining products from agents used in the said process, part of the invention being also applicable to apparatus for washing,”

These improvements are, in reference to this subject, in disintegrating plants and other vegetable materials by boiling them or “ subjecting them to heat or steam, and at the same time treating them with alkaline solutions or other agents” in thin layers or strata. The materials may be bleached in their entire length by separating and “ insulating” them in either a dry or wet state. From the lyes a material may be extracted suitable for the manufacture of picric acid or an acid resembling it, or a yellow colouring acid like picric acid, used in dyeing yellow, and this may be manufactured by means of nitric acid. The apparatus “ well adapted for the purpose” consists of “ a number of baskets or trays constructed of wire-work or perforated or reticulated metal, and connected by a brace, framing, or mounting, are placed in a vertical boiler or receiver, and so arranged that they, the said baskets or trays, fit into one another, one entering the other to about or rather less than half its depth, so that the material becomes reduced (as the operation proceeds); a space is left or is increased between the layer of material in the basket or tray, and the bottom of the basket or tray next immediately over it.” This “ arrangement may also be adapted to horizontal boilers or receivers. A small railway may be used to convey the baskets or trays, or the baskets or trays may be enclosed in a larger basket or tray revolving within the boiler or receiver.”

"The apparatus may be applied to washing textile fabrics and other articles, especially in lyes."

[Printed, 4d. No Drawings.]

A.D. 1862, May 6.—No. 1354.

OLARK, WILLIAM.—(*A communication from Félix Marie Baudouin and Henry Jérémie Christen.*)—"Improvements in cylinder printing apparatus."

"A mode of printing so called 'flat plate printing,' with a speed ten to twelve times greater than the ordinary mode of roller printing, and at the same time working with greater nicety than is obtained by the said mode of printing. For this purpose, instead of employing rollers engraved throughout their periphery, as commonly used," employing "rollers the diameter of which may be as large as is required for strength, but which present on a limited part only of their circumference the engraving intended to produce the impression, with this essential peculiarity, that the engraved part (whether embossed or sunk) shall be on the surface of portions of cylinders, and project from the roller concentrically to its axis. These rollers are so disposed as to produce successively as regards the part on which they act, and simultaneously as regards time, the impression of the proper color."

"The machine is so disposed" that "each printing roller only acts at the time the projecting part is passing which carries the engraving, they during the rest of their revolution exerting no action on the pressing cylinder; but as the latter in its motion causes the fabric to advance to a greater extent than the space occupied by the impression of the design," a contrivance is employed "which turns the pressing cylinder in a backward direction, and consequently the fabric with it, the exact quantity required for the next impression to unite and correspond perfectly with the foregoing. Moreover, the impression being only produced by the pressure of a limited portion of the cylinder against the pressing roller, it is evident that this pressure may easily be regulated, and especially in relief printing, which requires a very moderate and essentially equal pressure, which conditions cannot be realized when using printing cylinders acting throughout their whole surface, since by reason of a

“ fault in the centering, for instance, too great pressure may be exerted on a certain point of their periphery, and insufficient pressure at the opposite point of the same diameter.” The object being “ to obtain during the operation blank spaces, the extent of which may be graduated at will according to requirements, namely, for shawls, pocket handkerchiefs, and neckties, table covers, and other fabrics where the printed patterns are to be separated from each other by spaces or margins of more or less breadth.”

[Printed, 2s. 2d. Drawings.]

A.D. 1862, May 9.—No. 1392.

MAYALL, FRANCIS FREDERICK BURDETT.—(*Provisional protection only.*)—“ Improvements in dyeing mixed or plain fabrics “ and yarns.”

“ Instead of using a number of vats, and consequently a number of separate processes as at present adopted,” never exceeding “ three, and in all ordinary cases only two. For example, in dyeing either mixed or plain fabrics black in “ No. 1 vat,” using “ chipped or ground logwood, brown “ sugar of lead, manganese, and ammonia of copper, with a “ little fustic chipped or ground. The heat of the water and “ the proportions of the different materials must vary according to the substances of the articles to be dyed. No. 2 vat, “ which is a finishing or cleaning process, is composed of a solution of neutral chromate of potash, and bichromate of potash “ added, if necessary, or, for some shades, a little ammonia or “ sulphur of iron.”

[Printed, 4d. No Drawings.]

A.D. 1862, May 10.—No. 1408.

TAYLOR, HENRY DYSON, and ROBINSON, EDWARD.—(*Provisional protection only.*)—“ Improvements in piece-dyed “ woollen fabrics or fabrics composed of wool in combination “ with other fibrous substances.”

“ Producing blue selvages on piece-dyed fabrics,” consisting “ of wool alone or wool mixed with any other fibre or “ material.”

First, the material of which the selvaige to be made is “ first dyed on indigo blue in the vat in the usual manner,

“ next passed through a solution of alum or another salt to fix it more for scouring or fulling. The fabrics are next woven, scoured, &c., dyed, and, if necessary, ‘ burl dyed,’ all in the ordinary manner.” A solution is prepared of 10 pints of water, 4 pounds of yellow prussiate of potash (ferrocyanide of potassium), 1 pint of sulphuric acid 169° Twaddell, 2 pints of acetic acid at 8° Twaddell. This is called ‘ the changing liquor,’ and is applied to the selvages of the cloth by a brush, sponge, pad, blocks, by a calico printer’s cylinder machine, &c.; lastly, the cloths are washed in water. If no preparation of iron be used in the dyeing, and if the clothes are not to be “ burl dyed,” then the material for the selvages must be treated with some suitable iron mordant before the fabric or cloth is woven.

Second, to produce a brighter blue on the selvages, omit the application of indigo to the material and proceed as before.

Third, if the selvages are required of a duller hue, the indigo is applied as in the first process, and “ then after the cloths have been woven, dyed, and ‘ burl dyed ’ (if needful), and otherwise got up as usual, applying to the selvages any acid, such as tartaric, citric, or sulphuric, or any mixture of acids or acid salts,” “ such as may clear away other colors from the selvages, leaving the indigo blue undestroyed,” the fabrics are washed in water. The ‘ changing liquor ’ may be made of any cyanogen compound with any acid, acids, or acid salts, or a gas, vapour, liquid, paste, powder, &c. capable of yielding the like results.

[Printed, *4d.* No Drawings.]

A.D. 1862, May 14.—No. 1455.

DEACON, HENRY.—“ Improvements in the manufacture and production of certain colors, and in the apparatus employed therein.”

These improvements relate, in reference to this subject, to the manufacture or production of colours “ by the action of an elevated temperature on well-known mixtures of clays (*i.e.*, substances consisting mainly of silica and alumina), of sulphate or carbonate of soda, or of both, of sulphur and of carbon or of carbonaceous matter, the free access of atmospheric air during the first heating process being prevented.”

Applying and using "in the manufacture or production of the said colors of retorts, ovens, or furnaces, so constructed as to admit of their contents being inspected, stirred, or otherwise manipulated without injury from the admission of atmospheric air." "Amongst others, ordinary gas retorts may be employed, if provided with suitable easily moved and tightly closing doors." Applying and using "in the primary heating process in the manufacture or production of the said colors of 'close' or 'blind furnaces' or ovens similar to those employed in the manufacture of alkali for roasting salt cake or sulphate of soda," but in preference plaining the face of the iron frames and doors, and causing the doors to slide on the frames, the plained surfaces being in contact. Each door is provided with a screw clamp. Through these doors the material may be introduced and withdrawn, inspected, stirred, or otherwise manipulated." Other and much smaller doors may be employed for these latter purposes." The product after heating is freed from salts by washing.

[Printed, 10d. Drawing.]

A.D. 1862, May 15.—No. 1475.

BAGGS, ISHAM, and SIMPSON, WILLIAM.—"Improvements in treating straw, Spanish grass, and other vegetable fibres, in preparing a bleaching agent for vegetable fibres, and in recovering and treating an alkali resulting from the treatment of the said fibres, and in apparatuses employed therein."

"Manufacturing chlorine or bleaching agent" as follows:—Employing "two separate vessels, one of which is a retort made of iron, clay, or other fire-resisting material," in which is placed chloride of sodium or common salt. Sulphuric acid is charged into the retort by "one or more safety tubes into the crown or upper part of the retort." Instead of the vessel being as above described, "an ordinary apparatus for the generation of muriatic acid gas may be used." "The second vessel is hermetically closed, and contains black oxide of manganese and water, the materials which decompose muriatic acid and give off chlorine. The muriatic acid gas is led from the first into the second vessel, the gas is absorbed, and heat is generated," and chlorine is evolved.

The chlorine is either conducted into a chamber containing slaked lime, as "practised in the preparation of chloride of lime, or it may be conducted into a cistern containing a mixture of fresh lime and water," kept well stirred. "As it is preferable to allow the pipe supplying the muriatic acid to dip into the mixture of manganese and water," an exhauster is employed "to effect the more ready passage and consequent decomposition of the gas."

[Printed, 4d. No Drawings.]

A.D. 1862, May 19.—No. 1509.

EASTWOOD, JAMES.—"Improvements in machinery or apparatus for removing and wringing hanks of thread or yarns, and all kinds of fabrics when saturated with liquid."

This machinery is employed in connection with dye or other vats or vessels.

The peculiar feature of this invention is "that the yarns or fabrics can be thereby lifted, pressed, or squeezed, and twisted and wrung simultaneously, whether from cold, hot, or even boiling liquid, the combined operations being instantly effected by the motion of simple levers or handles." The vessel containing the yarns or fabrics, is placed within a framework that carries a pair of horizontal rollers and a long vertical screw that works in a nut in the upper part of the framework. Toothed racks carry the axes of the rollers, and the turning of a handle causes a pinion to move the axes so that the rollers either approach towards or recede from each other according to the direction of motion of the handle; thus the materials can either be squeezed or released from pressure. At the same time hooks at the lower extremity of the screw hold the material and enable it to be drawn through the rollers and twisted or wrung effectually. The screw is turned by means of a toothed wheel at its upper extremity, a separate handle and gearing being employed for that purpose. The refuse liquor returns to the vessel through a funnel.

[Printed, 10d. Drawing.]

A.D. 1862, May 23.—No. 1555.

BLACKLIDGE, ROBERT. — (*Provisional protection only.*) — "Improvements in the preparation of materials for sizing,

"dressing, and finishing warps, yarns, textile fabrics or paper, and also for thickening colors."

Treating "flour of wheat or other cereal grain, rice, sago, or other amylaceous substance or substances with diastase, for the purpose of procuring a gummy matter," with which is incorporated "lapis calminaris, terra alba, and alumina to any required extent for the purpose of obtaining a compound suitable" for the above purposes.

[Printed, 4d. No Drawings.]

A.D. 1862, May 29.—No. 1614.

ASHTON, GEORGE.—"Improvements in dyeing fibrous substances, and in the means or apparatus employed for that purpose."

"The method of employing barwood or other dye woods or wares in the process of dyeing fibrous substances, by having a perforated false bottom in the dye vessel to prevent the wood or wares coming in contact with the fibrous substances being dyed." The perforated false bottom is made of fine copper wire gauze fixed on a wood frame supported by a strong wire netting placed on each side, fixed to the wood frame; also a number of iron ribs are fixed across the frame. This frame is fixed on another frame "by pins and cotters, but may be secured by screw bolts or other convenient means;" another sheet of wire gauze is fixed to the bottom of the second frame, and "supported by strong wire netting, the whole thus forming a box or vessel with perforated bottom and lid," so that the wood or other wares employed may be introduced into it when out of the dye vessel and the lid secured, and "then the box or vessel lowered into the dye vessel, from which it can be lifted out again when the wood or wares are spent to be removed, and a fresh supply introduced."

[Printed, 8d. Drawing.]

A.D. 1862, June 12.—No. 1746.

INGHAM, JOHN, and WOOD, WILLIAM PICKARD. — "Improvements in preparing colouring matters for dyeing and printing."

"The mixing of red aniline dye with soda or any other alkali, whether organic or inorganic (except aniline), and

“ subjecting the same to heat until blue or violet colour is produced.” In preference proceeding as follows: “ one part red aniline, one part solution of caustic soda at 56 degrees of Twaddles’ hydrometer, and one part caustic lime,” are mixed together, and the mixture “ placed in an iron or other suitable vessel and subjected to heat in an oil bath or other contrivance, to the temperature of about 430 degrees of Fahrenheit’s thermometer for about eight hours. The mixture or compound is then treated with spirits of wine or other solvent to dissolve away the colour from the residue, and it is then ready for use.”

[Printed, 4d. No Drawings.]

A.D. 1862, June 24.—No. 1851.

CARR, THOMAS.—A “ machine for grinding, kneading, washing, and other like purposes.”

Amongst other uses, this machine may be employed for the grinding of indigo.

Edge runners, as well as the pan, are rotated, each by its own driving gear. The runners need not therefore come into contact with the pan, or they may be made to press on the material operated upon by means of a weighted lever. The edge runners may be allowed to rise on encountering a substance too hard for them to crush, and they may be adjusted to any required gauge.

The drawings show, amongst other examples, a mill that may be employed for grinding indigo, to be worked by a horse or small engine.

[Printed, 3s. 6d. Drawings.]

A.D. 1862, June 24.—No. 1857.

NICHOLSON, EDWARD CHAMBERS.—“ Improvements in the preparation of coloring matters, applicable to dyeing and printing.”

“ Blue coal tar dyes at present known, although soluble to a certain extent in alcohol and similar solvents, are almost insoluble in water,” and when solutions prepared by alcohol, &c., are “ added to water to make a dye bath they become precipitated or remain only suspended in water, consequently it is difficult to dye evenly and brightly with

“such a bath.” These improvements are to overcome these difficulties and to prepare “a blue coal tar dye soluble in water, either alone or mixed with acid or alkali,” and the following is the process:—In preference “the substance known as blue de Lyon, and that known as azaline” is boiled with water containing about 4 ozs. by weight of sulphuric acid to every gallon of water; when the soluble matter is all extracted, or nearly so, the insoluble residue is dried thoroughly, reduced to powder, and “about four times its weight of sulphuric acid, say sp. gr. 1·845 (*i.e.*, concentrated sulphuric acid of commerce)” added to it, and the temperature of the mixture is raised to about 300° Fahr., and kept stirred until all is dissolved, and it is kept “at about this temperature until a sample, when added to water, is entirely dissolved. If the temperature is raised too high sulphurous acid is evolved and the dye gradually destroyed. The acid solution can be diluted and used for dyeing and printing in the ordinary way, or if too acid the excess of sulphuric acid may be removed by lime or other suitable alkali; or, if an excess of lime be added, the sulphuric acid is entirely precipitated in the form of sulphate of lime, and a colourless solution is obtained, which, when neutralized with any vegetable or other acid, develops the improved soluble blue dye,” or by diluting with four times its bulk of water or brine, the color precipitates. “Concentrated sulphuric acid may be replaced by anhydrous sulphuric acid, which renders the blue soluble without the application of heat.”

[Printed, 4d. No Drawings.]

A.D. 1862, June 30.—No. 1913.

PARKER, THOMAS.—“Improvements in tinting or dyeing fabrics composed of mixed animal and vegetable fibres.”

“The fabrics are first well scoured and thoroughly cleansed, they are then in a moist state introduced into and stoved in a sulphur stove, the fabrics being kept open or extended whilst in the stove. The fabrics are then taken from the stove, and without extracting or removing the sulphur they are caused to pass through water, and then through the dye liquor. In performing this process it is important that the fabric should be kept open and passed horizontally through water; it is subjected to pressing rollers as it

“ comes out of the water. It is also important that it should
“ then be passed in an open state horizontally through the
“ dye liquor and be pressed between pressing rollers as it
“ comes from such liquor; the fabric is then to be dried. By
“ these means not only will the fabric be very evenly tinted,
“ but at the same time it will have a high finish com-
“ municated to it, the animal and vegetable substances in the
“ fabric being similarly tinted or dyed.”

[Printed, 4d. No Drawings.]

A.D. 1862, July 3.—No. 1939.

GILBEE, WILLIAM ARMAND.—(*A communication from Prosper Monnet and Henry Dury.*)—“An improved manufacture of
“ blue colouring matter.”

First, “the manufacture of blue colouring matter by means
“ of rosaniline set free.” A solution of red aniline is treated
with an alkali “soda, potash, or ammonia, in the proportion
“ of two parts of alkali to one part of rosaniline salt em-
“ ployed,” and the whole boiled until the liquid no longer
loses its color. “The precipitate is rosaniline. An acetate of
“ aniline is made by mixing 100 parts of aniline with acetic
“ acid of commerce (40 per cent. crystallisable), 20 parts.
“ One part of rosaniline is mixed with 5 parts of this acetate,
“ the whole is heated and kept slightly boiling until the
“ whole mass becomes of a blue colour. To obtain a blue
“ colour with a purple or red tint, the vessel containing the
“ mixture should be removed from the fire directly the desired
“ tint is obtained. The raw blue obtained is poured into a
“ highly diluted solution of sulphuric acid.” The blue
formed is separated on a filter and boiled with water several
times until the latter is colourless. In cooling the blue
separates in the form of a resinous mass, which is reduced to
powder and dissolved in six or eight times its weight of con-
centrated sulphuric acid; it is now precipitated in a large
quantity of water. “By drying this precipitate the blue is
“ obtained in the form of a copper-coloured powder.”

Second, “the employment of ordinary sulphuric acid of
“ commerce in the hot state to render the blue soluble in
“ water.” “Instead of precipitating the solution of blue
“ in concentrated acid by water,” it is first heated “during
“ 25 to 30 minutes at a temperature of 266 to 284 degrees F.,

"and then precipitated by water." The blue separated "will entirely dissolve in boiling or slightly acidulated water."

Third, "the employment of alkalies to form bluiue, and its conversion into salts susceptible of giving a blue color." The blue obtained by precipitation from sulphuric acid in "the cold state by means of water" is boiled "in 10 parts of alkaline lie, containing 2 parts of caustic soda or potash; the blue is changed to a grey or black basic substance, which, when washed several times in pure water, will dissolve in heated aniline." This is called bluiue, "a new organic base susceptible of forming salts with the acids." One part of the hydrochlorate of this base dissolves in 5 parts of aniline, forming a blue; the aniline employed is saturated "with its own weight of liquid and concentrated hydrochloric acid," the whole raised to boiling, and "the same quantity of water as the weight of aniline" is added and the liquid filtered. "The blue remains on the cloth; it must be washed several times with pure water, dried," and is ready for use "in the form of a powder or dust, and will dissolve in alcohol."

Fourth, "the process or means herein-before described for obtaining a blue and blue purple color applicable for printing or dyeing" "by employing water or ordinary methilated (methilated?) spirit."

[Printed, 4d. No Drawings.]

A.D. 1862, July 14.—No. 2019.

CROSSLEY, CHARLES, and CROSSLEY, JAMES WILLIAM.—

"Improvements in means or apparatus employed in washing and finishing textile fabrics."

First, "the application and use of a heck or frame, with openings for separating the draughts, pieces or fabrics which have been run or passed through any dyeing or other similar vessel together."

Second, "the application to dollys of apparatus for folding or cutting fabrics as delivered therefrom."

Third, "the method of taking out or removing the twines from fabrics by mechanical means."

The "heck" is composed of a series of round staves placed *between two rails*, leaving or forming spaces, through which

the several pieces pass to and over a winch suspended above, and pass over another winch which is supported in hangers over "a washing machine, commonly called a dolly," which conducts the fabrics to and betwixt the rollers of the dolly. "The construction and operation of this kind of washing machine being very well known, needs no description here." "The 'cutler' or folding apparatus, which is also well understood," is suspended some little distance from the dolly, and above it, "so that when the fabrics are taken out of the dolly, they will pass over and betwixt the rollers of the cutler, and be folded on to the horse-tree," or fall into a box or coach, which turns on a central spindle or pivot, from which they pass in contact with a right and left hand threaded roller or brush, rotating in a contrary direction to the travel of the fabrics, the twines of the fabrics are easily removed or opened, or the fabrics spread out. The fabrics then pass over another roller.

[Printed, 10d. Drawing.]

A.D. 1862, July 22.—No. 2091.

VAUTIER, ANTOINE CONSTANT.—"Improvements in obtaining fibrous materials, and in manufacturing paper pulp, also in preparing, bleaching, and treating fibrous materials, and fibrous and textile fabrics, and in producing agents used in part of the invention."

First. Treating the plants used for making paper pulp and fibres, "by acid or alcoholic fermentation, and by ordinary processes for extracting and separating fecula, alcohol, and coloring principles. All the plants, parts of plants, and fibres" which are operated upon "contain more or less fecula, which cements and encloses the fibres;" the inventor sometimes extracts, separates, and collects "the alcohol, fecula, glucose, and coloring principles, by sulphuric acid, diastasis, and other ordinary operations." This method "may also be applied to leaves, petioles, and stalks of trees and plants."

Second. Preparing "threads and fabrics of flax, hemp, cotton, and other vegetable matters," by "immersing, soaking, and washing them in cold or warm acid, or cold lime solutions," between which operations they are washed

or steeped "in cold or warm pure or alkaline water" and sometimes dried. After this they are boiled or cooked and washed, once or oftener. Sometimes some of the preliminary steps are omitted before boiling or cooking. Threads, fabrics, and other products prepared by this process "may be brought to any ordinary shade of white required in the market, by bleaching them in any ordinary manner, such as by sulphurous acid, chlorine, chlorides, or hypochlorites." Products are obtained resembling silk, by coating these fabrics, &c. "with the azotized gummy bodies discharged from silk during the ungumming process, and obtained from the liquors used in such process by concentration or evaporation, or prepared artificially by combining the said gummy bodies, or gum arabic, gum copal, gum adragant, or tragacanth, or other gum, with albuminous or gelatinous or albuminous and gelatinous solutions, with or without resinous solutions." After applying these solutions, they are rendered "insoluble by alcohol," by means of "warm water, steam, hot air, or drying." Threads of flax, hemp, and other like products treated by this process "may be combined with and dyed like silk and wool; also satins and velvets may be manufactured thereof."

[Printed, 10d. No Drawings.]

A.D. 1862, July 24.—No. 2107.

PERKIN, WILLIAM HENRY.—(*A communication from Alexandre Schultz.*)—"Improvements in printing and dyeing when aniline and analogous coal tar dyes are employed; also in preparing coloring matters."

These improvements are in printing and dyeing with the above dyes, employing "as a mordant arsenious acid or a salt or compound thereof," combined with alumina. In printing, in preference, mixing "together arsenite of soda, acetate of alumina, and the dye," printing the fabric with this compound and afterwards steaming it. "The several materials may, however, be applied separately." The colouring matters preferred to be employed "are those known commercially as aniline purple, violet imperial, regina purple, bleu de Lyon, and magenta," "The colours thus prepared are thickened with starch, gum, or other suitable thicken-

“ing, and printed on to the fabric, which is then dried, “steamed, and washed in the usual manner.” There are several methods given of preparing the colour according to the colour used. In dyeing it is preferred “to apply first to the “fabric or fibre a mixture of arsenite of soda and acetate of alumina, and afterwards to pass the fabric or fibre through the dye bath in the usual manner.” “Fabrics and fibres may also be dyed by passing them through a bath of coloring matter prepared with the mordant as for printing.” Other salts of alumina may be employed, though the acetate of alumina is preferred. “In place of arsenious acid or salts or compounds thereof, salts or compounds of antimony may be employed,” and these are employed “in combination with alumina as before.” “Although the combined use of arsenious acid or a salt or compound thereof, or of antimony with alumina, is an important feature of this invention,” still those substances may be used without alumina, other mordants acting in an analogous manner being substituted. “The acetates of zinc and magnesia may be substituted for acetate of alumina although the result is not so satisfactory.”

[Printed, &c. No Drawings.]

A.D. 1862, July 25.—No. 2113.

ROBERTSON, PETER.—“Improvements in producing brushing or frictional surfaces.”

“An important application of rollers with the improved surface is to calico-printing machines, in which they may be used for supplying the colour to the copper printing roller. In this application the action of the improved surface is first to clear out colour remaining in the engraved lines; secondly, to supply colour taken up from the colour trough and carried between the projections; and finally to clean and polish the unengraved surface.”

The said frictional surfaces are moulded in vulcanized or manufactured india-rubber. The material is moulded in sheets of convenient size, one side of each sheet being plain, and the other side having “a series of short projecting points or pins, which points or pins form the actual brushing or frictional surface.”

In the mould plate for one side of the material there is drilled a series of small holes which may be partly cylindrical and terminate in a somewhat conical point.

The drawings show a roller with the improved surface applied to it.

[Printed, *sd.* Drawing.]

A.D. 1862, July 28.—No. 2130.

SPENCE, WILLIAM.—(*A communication from Nicolas Philibert Guinon, Jean Aimé Marnas, and François Bonnet.*)—"Improvements in the preparation of a red colouring matter."

"The preparation of a red colouring matter from phenic or carbolic acid" as follows, and "the application of the same to dyeing and printing." About 23 lbs. of phenic or carbolic acid, about 10 or 20 lbs. of oxalic acid, and from about 7 to 14 lbs. of sulphuric acid, are mixed together, and "heated until the colouring matter is formed of the requisite colour and consistence," when excess of acid is removed by boiling water. The matter, a "light pitch, with a green shade of cantharide," may "be dried and reduced to powder," or is "converted into more solid matter by the following process:" 2½ lbs. of this matter is mixed with 5½ lbs. of ammonia of commerce, and heated in a close metallic vessel to about 270° F. for about 3 hours, when it is allowed to cool, and the vessel opened is found to contain "a liquor rather thick, and "possessed of a considerable colouring power. This liquor, "treated by acids, furnishes a deep red precipitate, which is "the fast colouring matter modified as required, and which "is capable of dyeing red silk, wool, and other textile materials," and is named "péonine, and is applicable to dyeing and printing generally." In the first part of the process, "other oxidizing bases may be employed, such as salts of mercury or other salts, arsenic acid, oxide of lead, and "others, not only on ordinary phenic or carbolic acid but on "the analogous substances, such as creosote (cresil) and "others, and in the second part of the process," "ammoniacal salts, or other azotic bases, such as the acetate or benzoate of ammonia, urea, and others," may be "used at "a suitable temperature, either with or without pressure," in place of ammonia.

[Printed, *sd.* No Drawings.]

A.D. 1862, July 28.—No. 2132.

SPENCE, WILLIAM.—(*A communication from Nicolas Philibert Guinon, Jean Aimé Marnas, and François Bonnet.*)—"Improvements in the preparation of a blue colouring matter."

"The preparation of a blue colouring matter from phenic or carboic acid," as follows, and "the application of the same to dyeing and printing." Five parts of the matter prepared as described in No. 2130, A.D. 1862 and named "péonine," are mixed with about from six to eight parts of aniline, and the mixture heated near to the boiling point and kept so for some hours, until the material is completely transformed into "a blue colouring matter, which is purified by successive washings, first, with boiling water acidulated with sulphuric, hydrochloric, or other acids; secondly, with heated coal oil; and, thirdly, with a dilute solution of caustic soda or potash, or other alkalies. The matter thus obtained is passed into acidulated boiling water, then dried. It is then in a state of powder, with golden shades, soluble in alcohol, methyle, and other spirits, and the solutions of which may be used directly for dyeing and printing," and is named "azaline." Besides aniline, "péonine" acts on naphthilamine, tolluidine, cumidine, and others."

[Printed, &c. No Drawings.]

A.D. 1862, July 28.—No. 2136.

NOBLE, ALFRED.—"Improvements in obtaining and treating compounds of alumina."

These improvements are, in reference to this subject, obtaining a preparation of alumina which, for many purposes, may be used as a substitute for alum, as follows:—Clay or other material containing alumina is ground to a fine powder and calcined in a reverberatory furnace at a low red heat and exposed to the action of hydrochloric acid gas (from making salt cake or otherwise), "care being taken that the temperature of the gas is somewhere about 200° F." "If the temperature is too high no action will take place, and if too low the compound will become partly liquified."

When the operation has been successfully performed the resulting substance, which is called "crude chlor-alum, is in a dry state." The apparatus "suitable for carrying on

" this operation consists of a chamber built of sandstone, brick, or other material, little acted on by hydrochloric acid, and furnished with shelves of the same material, arranged in such a manner that the current of hydrochloric acid gas shall circulate over each." "The crude chlor-alum" is purified from iron and free acid by keeping it heated with stirring until hydrochloric acid gas ceases to be evolved between 212° and 240° F., and it is well to pass a current of air over it," by which means "all free hydrochloric acid is driven off, and the greater part of the chloride of iron in it becomes decomposed; hydrochloric acid being driven off and oxide of iron remaining." Chlor-alum, thus prepared dissolves in water, leaving oxide of iron and silica undissolved and these are removed by filtration or subsidence. "By this means an almost pure solution of chloride of aluminium is obtained, and is suitable for the use of the dyer, paper maker," &c.

[Printed, *4d.* No Drawings.]

A.D. 1862, July 29.—No. 2152.

WALDIE, GEORGE.—(*Provisional protection only.*)—"Improvements in colour printing, and in the machinery or apparatus employed therein."

This invention, amongst other uses, is applicable to calico printing.

"The inking table, over which the inking roller is passed, is divided into longitudinal divisions, and the roller is guided by end flanges, so that the same part of the periphery of the inking roller always passes over the same division of the table. The divisions of the table are made to correspond to the width of the surfaces of the lines to be printed, or any other convenient width, and they are separated by grooves or spaces, so that the different colours cannot get mixed on the table or run together." "The guiding of the roller in any of the styles of working may be done otherwise than by flanges."

"In the second style of printing, according to these improvements the flange guides on the roller, and the guide pieces on the table and on the type or other work to be printed from, are so arranged that the same spots or parts of the roller can be brought down on the corresponding

“ parts of the table and of the type or other thing to be printed from.” “The inks are laid on the ends of the pieces of the table, which ends may be roughened or grooved to hold a supply of ink for distribution by the roller, or the colours may be supplied from the (ductor) rollers, or in any other way.”

[Printed, 4d. No Drawings.]

A.D. 1862, July 29.—No. 2155.

HENRY, MICHAEL. — (*A communication from Jean Baptiste Vasseur and Victorien Joseph Janssens.*)—“Improvements in obtaining fibrous materials and paper pulp; in treating, cleansing, and scouring fibrous materials and fabrics manufactured thereof; in producing soap for the said operations; and in obtaining products from liquors used therein.”

These improvements are, in reference to this subject, as follows :—Making a caustic soap “by combining a concentrated solution of caustic alkali with a saponifiable material in a fluid state, and then stirring or agitating the mixture, and leaving it to stand or at rest.” “Resinous bodies and essences may be used in the manufacture of the caustic soap by dissolving them in the alkali before adding the other or saponifiable ingredient.” For various purposes it is preferred to use a close boiler, in which the materials to be treated are disposed in thin layers, over each of which an openwork, perforated, or reticulated diaphragm or surface is laid, so as to press gently on the materials and keep them down, thereby preventing the fibres from entangling; they may be washed in pure water without steam pressure, or they may be steamed.” This apparatus may also be use for washing fibres, goods, and fabrics, and especially after dyeing, also for scouring, boiling, or removing gum and grease from fabrics and fibres.” By adding acids, preferring sulphuric and sulphurous acids, to the alkaline liquors after use, a precipitate will be formed which may be collected and employed for the manufacture of picric acid. The residuary acid solution may be evaporated and caustic soap made therefrom.

[Printed, 8d. Drawing.]

A.D. 1862, August 2.—No. 2189.

BRIGGS, JAMES.—“Improvements in the manufacture of
“belts, webs, braids, tapes, laces, and other similar articles
“produced by weaving, plaiting, or twisting.”

“My invention relates to such articles as belts, webs,
“braids, lace, tapes, bindings, and other similar articles
“known in the trade as small wares, and consists in manu-
“facturing such articles with a figured surface, the designs
“or patterns to be obtained by printing either one or both
“sides with engraved cylinders, in contradistinction to pro-
“ducing such patterns by means of jacquard weaving and by
“block printing.”

“The machinery I employ for printing braids is the same
“as now employed to print calico, the pattern cylinder being
“engraved with the required design, and the braid or web
“passing between the said engraved cylinder and another
“or bed cylinder, and I arrange or adapt thereto a guide
“plate or pins to insure the said braid passing correctly
“under the engraved surface as it is fed thereto. The
“designs may be engraved on the cylinder side by side,
“according to the width of the braid, and the guide plate so
“arranged as to pass or conduct each braid or web directly
“and exactly beneath the particular design intended to be
“printed on it.”

“The arrangement of apparatus for supplying color and
“other parts of the machine are similar to those now in
“use for printing woven fabrics. I would remark that I am
“aware that braids have hitherto, in some few instances, had
“designs printed upon them by blocks on surface printing,
“but with a very imperfect result consequent upon the block
“or surface printing yielding such rough or imperfectly
“defined edges in the pattern, which defect is entirely
“obviated by the use of the engraved cylinders.”

[Printed, 4d. No Drawings.]

A.D. 1862, August 5.—No. 2197.

HIGGIN, JAMES.—“An improved substitute for cowdung
“used in printing and dyeing textile fabrics or yarns.” This
“invention consists in “the use of double or compound
“soluble salts of tungstic or molybdic acid and arsenic or

“phosphoric acid with alkaline or earthy bases in the process termed dunging in calico printing.” To “a solution of mono-arsenate or mono-phosphate of lime in water, adding a solution in water of tungstate or molybdate of an alkali, by preference, soda, and stir well.” “The mordanted fabrics or yarns are now passed through the bath in the manner usual when cow dung or its substitutes are employed;” or, “solutions of mono-arsenate or mono-phosphate of lime and tungstate or molybdate of an alkali” are mixed together, and a white precipitate or paste is produced, which is added to “the dunging cisterns charged with hot water; the paste dissolves and the required double compound salt is produced.” “The total quantities of the salts used and their relative proportions may be varied according to the sort of mordanted goods to be dunged off, so as sometimes to have a neutral reaction in the bath, and sometimes an alkaline one, as also a weaker and stronger bath.” Mono-arsenates and mono-phosphates of the alkalis will answer as well as the corresponding lime salts, and any soluble salt of tungstic or molybdic acid may be used in place of tungstate or of molybdate of soda.

[Printed, 4d. No Drawings.]

A.D. 1862, August 14.—No. 2295.

BLOCKEY, JOHN SANDERS.—(*Provisional protection only.*)—“Improvements in the manufacture of colouring matters.”

Adding “to aniline or its homologues a mixture of nitric and hydrochloric acid,” and maintaining “this compound for some time at a temperature of about 180° F.” and thus obtaining “a mixture of red, purple, and blue, the proportions of which will vary according to the quantity of acid employed. The colours contained in the mixture may be separated one from the other and purified, or the process may be varied by making a mixture of nitrate of aniline, hydrochlorate of aniline and aniline, and heating the mixture as before.” The “homologues of aniline may be substituted for aniline, and the corresponding compounds of these may be substituted for the compounds of aniline above mentioned.”

[Printed, 4d. No Drawings.]

A.D. 1862, August 18.—No. 2314.

CIMEG, JOHN.—“Improvements in depositing silver and
“ other metals on fabrics and other materials.”

Treating the fabric either by printing or otherwise with a mordant consisting of “vegetable juices, more especially those
“ which are acid to the taste and contain simultaneously a
“ small amount of tannin and a matter acting like tannin
“ upon chemical agents, such as currants, sorbs, and other
“ berries; apples, pears, &c., have more or less the property
“ required.” “Suppose there were 10 grammes of loose silk
“ to be silvered, the first thing to be done is a complete
“ cleansing of the matter from all foreign substances like
“ grease, gum, colouring matter &c. Now the matter is to
“ be macerated in from 59 to 60 grammes of juice, of the
“ above-mentioned fruits, which may be stewed for winter
“ use,” after which it is washed perfectly with distilled water,
and immersed in a solution of ammonio-nitrate of silver, in which an excess of ammonia has been avoided by only partly dissolving up the oxide, and “the muddy solution is then
“ filtered.” After steeping it in the ammonio-nitrate of silver, it is soaked in a solution of 20 grammes of Rochelle salt in 300 grammes of distilled water and gradually heating it with stirring “to from 40 to 50 degrees Celsius,” after which the silk is to be washed and left to dry. Gold or platinum may in like manner also be made to deposit and adhere firmly to fibres of silk, leather, and paper, so that they will not rub off.

[Printed, 4d. No Drawings.]

A.D. 1862, August 22.—No. 2346.

MACKAY, JAMES.—“The manufacture in an improved
“ manner of soap powder to be used as a substitute for soap,
“ and for washing and bleaching purposes.”

This invention consists, first in combining together soap crystals, best yellow or pale soap, pearl ashes, black or pot ashes, water, soda ash, palm oil, sulphuric acid, sulphate of soda, and chloride of lime, all in certain proportions, by boiling together for some hours; on cooling, the result is a granular powder, in which state it is packed for sale.

Second, “the ingredients are first combined into two separate
“ mixtures, which mixtures are subsequently combined to

“form the soap powder.” The first mixture consists in certain proportions of cold soft water, pale or yellow soap, olive oil or tallow, white soap, brown tallow soap, black or soft soap, liquid caustic soap, and palm oil, “proportional quantities of grease, tallow, or oil may be used;” these are heated for some hours gradually up to 210° Faht. and gently evaporated with stirring for some time. The second mixture consists in certain proportions of water, soda, best American white or pearl ashes, sulphate of soda, “soda ash of a strength of fifty-three per centum,” and “fuller’s earth bleached by chloride of lime or sulphurous acid;” these are mixed for some hours at about 99° Faht., afterwards raised to 190° Faht., and continued for one hour more; the two mixtures are then put together and “kept at a heat of 210° F. for an hour being constantly stirred;” on cooling, the result is a granular or more or less crystalized powder. A somewhat cheaper powder may be made by doubling the quantity of soda employed. This second compound is not given in the Provisional Specification.

[Printed, 4d. No Drawings.]

A.D. 1862, August 26.—No. 2365.

DAVIES, GEORGE.—(*A communication from Alexandre Marie Fortuné Tulpin.*)—“Improved machines for washing skeins of cotton, linen, wool, or silk.”

“Upon a cistern or vessel having an inclined bottom of either metal or wood (and furnished at its upper end with a compartment to contain the feed-water, and at the opposite end with two sluices for the ejection of the same) is fixed the framing of the machine, supporting a sliding cross beam carrying a suitable number of bobbins, upon which bobbins the skeins are placed in such a manner that their lower part or loop hangs in the water of the cistern. The bobbins are caused to revolve continuously by means of an endless belt passing over a pulley actuated by means of a worm and wheel, and bevil gearing drawn by the main or crank shaft, at the same time that the cross beam which carries them is caused to slide to and fro by means of a connecting rod driven by a crank on the said shaft, and thus a compound movement similar to that used in hand washing is imparted to the skeins.” The pin of the crank

above named is so constructed as to be capable of sliding in the crank, so that the amount of movement given to the cross beam may be readily adjusted. The whole machine is driven by the direct application of a small steam engine to the crank shaft.

[Printed, 10d. Drawing.]

A.D. 1862, August 26.—No. 2367.

JAROSSON, LEON. — (*Provisional protection only.*) — “An improved process and machinery for bleaching or washing textile fabrics or materials.”

This process consists “in bleaching or washing textile fabrics or materials by means of dry steam and machinery of the following construction:” To a suitable framing is connected “a series of rollers, over and about which the fabrics are passed; the lowermost rollers are placed in a pan or trough containing alkali, caustic soda, or carbonate of soda; the several rollers being set in motion the fabrics are drawn from one roller and pass through the solution in the pan or trough, thence they pass upwards between pressure rollers, and, finally, to a winding-on roller.” The mode of operating with the above apparatus is as follows:—First soak the fabric in old wash for four or eight hours at 40° to 50° C., then remove the fabrics, well wash and squeeze them, and pass them through the above machine, employing “a solution of caustic soda from 5 to 10 degrees Baumé of strength, and from 40 to 50 degrees Baumé” [Centigrade?] of heat; the fabrics should then be removed from this apparatus and coiled around the tube of the bleaching apparatus.” Steam of about 3 atmospheres pressure is then admitted into the said tube and passes through the perforations therein, “and permeates the fabrics wound around the same,” and afterwards the fabrics are submitted to chloride of lime solution, then to muriatic acid, and again placed in the bleaching apparatus and washed, treated to a chloride of soda bath and afterwards to muriatic acid, well washed, placed in a soap bath, and finally spread in the open air. In some cases “the pierced tube of the bleaching apparatus may be dispensed with and the fabrics be simply rolled up and placed upright in the vat or placed in a heap.”

[Printed, 4d. No Drawings.]

A.D. 1862, September 4.—No. 2446.

CLARK, WILLIAM.—(*A communication from Charles Philippe Collin.*)—"Improvements in the manufacture of a blue coloring matter."

Taking "equal parts of aniline red and crystalized toluidine," and heating them for five or six hours at a temperature not exceeding 324° Faht., and not less than 270°, "after which time a paste of a beautiful deep blue colour is produced of a slightly violet hue." To purify this paste from traces of aniline red and toluidine, it is boiled with dilute sulphuric or muriatic acid, in preference a mixture of one part of common muriatic acid with eight or ten of water, "until there are no longer any traces of red color in the washing waters. The insoluble residue will be pure blue, which may be used for dyeing and printing." In the Provisional Specification the temperatures at which the mixture of aniline red and crystallized toluidine are to be heated are not exceeding 388° Faht., and not less than 334° Faht.

[Printed, 4d. No Drawings.]

A.D. 1862, September 12.—No. 2512.

SMITH, JOHN BURNS.—"Improvements in washing and mangling machines applicable in part to straw dyeing and to bleaching."

First, "consisting of a barrel or hexagon cylinder" "placed horizontally, the ends of which are mounted on central bearings axes in appropriate or suitable framing." On the axis of the "barrel are fixed three connected radial arms set equally apart in the circumferential line of rotatory direction. The outer extremity of each arm is an handle, so that the barrel may receive a rotatory movement, also an agitating oscillating movement backwards and forwards intermittent rotation. To receive the fabrics to be operated upon the barrel is provided on its outward horizontal surface with a suitable opening, upon which is a removeable cover capable of being secured watertight. Inside the barrel are placed and fixed from end to end three divisions equally apart, and each division extending from the inner periphery towards the centre of the barrel to about one-third of the diametrical line," composed of a series of rods

" or bars placed from end to end toothed with studs, or
 " covered with bristles or other suitable elastic material."

Second, the balls used in washing machines may be
 " covered with bristles;" in some instances they are made
 hollow that "they may float more easily, and they may be
 " made of tin or other suitable light metallic substance not
 " capable of rust, and may be covered with rough woollen or
 " horsehair cloth."

Third, "applying and adapting through the centre of the
 " axis of the barrel an orifice with a moveable joint to admit
 " hot water, steam, or other solution for any other purposes
 " required in washing, dyeing, and bleaching."

Fourth, arranging, combining, and adapting "of three
 " rollers whose axes or centres are somewhat near equi-
 " lateral," "two of the rollers being horizontal and connected
 " by gear with each other, and their periphery surfaces
 " driving the third or upper roller by friction by its being in
 " contact with the periphery surfaces of the two horizontal
 " rollers."

Fifth, putting additional weight to the upper roller so as it
 may press upon the two rollers beneath in communication
 with it by means of a stone the entire length of the roller, and
 suspended from its axes.

Sixth, constructing "the side framing of the machine,"
 " in the whole as to be within itself a concealed receptacle or
 " shield for the gearing the necessary wheelwork that no
 " accidents or derangement may occur."

[Printed, 10d. Drawing.]

A.D. 1862, September 17.—No. 2552.

WATSON, WILLIAM, and WATSON, WILLIAM HENRY. —
 (*Provisional protection only.*)—"An improved process or pro-
 " cesses for the preparation of certain coloring matters from
 " aniline."

This process consists in mixing about two parts of aniline and
 one part of aqua regia (a mixture of nitric and hydrochloric
 acids), and heating the mixture "to about 340° F., and by
 " continuing this temperature coloring matter is gradually
 " formed," consisting of a red, a blue, and another substance of
 a dark colour. The red is washed out by water, and the residue
is treated with alcohol which dissolves the blue colour and the

dark substance. To the alcoholic solution is added five or six times the volume of benzole, and the mixture left at rest for some hours. The benzole retains in solution the black colouring matter and the blue is precipitated. The liquids are decanted off. "This blue coloring matter is soluble in alcohol" and is then ready for use." "Instead of mixing aniline" and nitric and muriatic acids in a liquid state," similar results are obtained by mixing the vapours "or gases arising" from the distillation of aqua regia with the vapour of aniline, or passing such vapour of aqua regia into liquid aniline, the resulting mixture being afterwards submitted to heat and the other processes as before mentioned."

[Printed, 4d. No Drawings.]

A.D. 1862, September 18.—No. 2558.

KAY, ROBERT. — (*Provisional protection only.*) — "Improve-
ments in printing calico and other surfaces, and in appa-
ratus connected therewith."

"First, "a novel application of and improvement upon the
sieve now used by block printers to supply the coloring
matter, and consists in adapting such apparatus to cylinder
printing particularly, but it may also be applied to various
descriptions of printing, such as type surface or letter-press
printing." The "sieve consists of an internal cylinder
having an external covering of india-rubber or other elastic
substance, so as to form a cavity or chamber between the
two," which "is to be supplied by tubes with water or
liquid from a cistern, and the pressure duly regulated by
valves; the surface of the india-rubber may either be cor-
rugated or covered with woollen or other fabric." "If the
water be not sufficient to prevent the india-rubber covering
from bagging it may be confined by small parallel rods or
tubes to distribute the pressure more evenly."

Second, "the novel employment and use of an endless band
of wire gauze instead of and as a substitute for the band of
felt or flannel now employed in ordinary calico printing
machines to supply the colouring roller with colour, by
transferring it from the 'furnishing roller' rotating in the
color trough to the said color roller, by which means a
considerable improvement is effected in imparting the color
to the type or design."

[Printed, 4d. No Drawings.]

A.D. 1862, September 23.—No. 2595.

DOBSON, WILLIAM.—“A new method of producing various colours on lace or other fabrics.”

Hitherto it has been usual to dress each piece of lace or other fabric with one color only, but this method consists “in the employment of various colored dyes for one and the same piece of lace or other fabric, by which means the lace or other fabric acquires any required colors.” The lace piece intended to be dressed according to this method in the first place is “bleached white; it is then stretched on the dressing frame, and the dressing materials having been dyed of the colors required to be imparted to the lace, the required colored ‘dressing’ materials are next laid on the piece of lace (or lace piece) at the part or parts required, and the lace is then rolled and rubbed until it is dry or nearly dry; this completes the process of imparting colours to the lace. The lace may be dried by other ordinary means instead of rubbing it.”

[Printed, 4d. No Drawings.]

A.D. 1862, September 23.—No. 2600.

WILKINSON, WILLIAM.—(*Provisional protection not allowed.*)—

“Improvements in the manufacture of knitted elastic fabrics, and in the machinery employed therein.”

“Tieing and dyeing” “loop elastic fabrics when manufactured and finished into stockings, shirts and drawers, dresses or pantaloons.” This invention consists:—“In tieing the stocking or other article with certain measured spaces of string or other suitable equivalent so as to prevent the dye from coming in contact with the whole of the web or stocking or other article that is made of a looped and elastic character,” and so leaving “open a sufficient space to receive the color,” thus producing a striped ornamental article. The goods are not only made of two colours, “but of as many colors as may be deemed requisite for the article.” “Instead of the stripes being introduced by the various colored threads into the articles” this “fabric is ornamented by dyeing the spaces required for the purpose.” Also painting “with mineral or vegetable dyes or coloring matter all elastic and loop fabrics” and providing “holders

“ to pass them into the stocking or other article so as to hold
“ them in form and ensure a complete and level stripe when
“ the fabric is in a stretched position.” Also printing and
ornamenting “ the same articles by blocks when the goods are
“ stretched on frames or boards covered with sponge or soft
“ leather, so that when the blocks are applied to the fabric, a
“ proper and equal design is ensured over the whole surface
“ of the fabric.”

The other parts of the Specification relate to the manufacture of knitted elastic fabrics and to the machinery employed therein.

[Printed, 4d. No Drawings.]

A.D. 1862, September 24.—No. 2605.

MADDICK, WILLIAM, the younger.—“ An improved process
“ or method of treating and preparing madder for dyeing
“ purposes.”

This process consists, first, in treating madder for dyeing purposes after being ground by first “ saturating, damping,
“ or wetting with water, and then allowing it to stand for any
“ time within twenty-four hours previous to or before it is
“ placed in the dyeing bath or beck.” In practice it has been found “ that if there is added a quantity of water equal in
“ weight to the madder under treatment very desirable results
“ are obtained,” and this quantity is preferred. The madder ground is laid upon a floor and sprinkled with water at the ordinary temperature, a watering pot or a pipe and rose may be conveniently used, “ and the madder is turned over” so “ that every fibre shall be saturated,” “ but not wetted sufficiently to enable a person to expel water from a handful,
“ nor sufficiently wetted to carry off any of the colouring
“ matter.”

Second, “ preparing madder for dyeing purposes by drying
“ without pressure or with limited pressure after being
“ treated” as above. “ Such dried madder requires a larger
“ quantity of liquid added thereto in the bath or beck than
“ does the madder treated as first herein described, and which
“ is the most convenient and economical at factories and
“ works.”

[Printed, 4d. Drawing.]

A.D. 1862, September 29.—No. 2645.

ELLIS, HENRY.—“Improvements in the manufacture of com-
 pounds of silica, and in the application of certain compounds
 of silica to mineralize woven fabrics, paper, and paper pulp,
 to harden and preserve stone and cement, in the production
 of artificial stone and paint, and in the production and
 glazing of porcelain and such like manufactures.”

The Abridgment of this Specification is inserted in consequence of the allusion made to it in No. 2267, A.D. 1865. The mineralization of woven fabrics has no reference to bleaching, dyeing, or printing.

The soluble silicates referred to in the above-mentioned Specification are manufactured in the following manner:—The compound silicates are first precipitated from solutions of silicate of soda or of potash by means of solutions of any of the salts of the metals or of the earths. The precipitates are then washed, and, whilst in the gelatinous state, they are redissolved in a solution of silicate of soda or of potash. If the silicates have been allowed to dry, the mixture is heated up to boiling point to facilitate their solution. All gelatinous silicates may be dissolved in the above manner and by addition of carbonates of soda or of potash.

In the case of the boro-silicates, phospho-silicates, and chromo-silicates, the precipitants are, respectively, borate of soda, phosphate of soda, and chromate of potash.

Saturated solutions of silicates of soda or potash are made by the addition of gelatinous silicic acid.

Soda or potash silicate of lime is precipitated by chloride of lime, soda or potash silicate of alumina by alum, and soda or potash silicate of copper by sulphate of copper. “Solutions of the other earthy and metallic silicates are similarly produced.”

[Printed, 8d. No Drawings.]

A.D. 1862, September 30.—No. 2651.

HOYLE, ROBERT. — (*Provisional protection only.*)—“Improvements in machinery or apparatus for printing surfaces of woollen, mohair, cotton, and other fabrics.”

These improvements are “in the novel adaptation and arrangement of machinery for printing woollen fabrics such as ‘rugs’ and other similar articles.” The machine

consists of a frame, in which there works a colour roller and a printing cylinder, one above the other, and the latter made adjustable by two screws; the colour is supplied from a trough beneath by means of an endless cloth, and the machine may be set in motion by means of a handle in connection with the colour roller.

[Printed, 8d. Drawing.]

A.D. 1862, October 4.—No. 2680.

BARCLAY, ANDREW. — “Improvements in printing textile materials and fabrics and in machinery therefor.”

First, “the general arrangement of the machine.”

Secoud, “the use of two or more surface rollers for printing warps.”

Third, “the use of an endless blanket or other material passing round the impression and drying cylinders.”

Fourth, “the use of a glazed cloth or other similar material passing round the impression cylinder and through the washing apparatus.”

Fifth, “the use of gas jets for drying the printed yarns or cloth and blanket.”

Sixth, “the use of a series of steam pipes for drying the printed cloth and blanket.”

Seventh, “the system of driving the receiving or take-up beam by frictional contact.”

Eighth, “the returning of the printed yarns or cloth and subjecting both sides to the drying apparatus.”

Ninth, the “use of an endless oil or glazed cloth passing to and from the impression cylinder.”

Tenth, “the use of a reed for guiding the yarns in a regular manner on to the impression cylinder.”

Eleventh, “the use of a cleansing or washing apparatus,” consisting of a cistern containing the washing liquid, and in which are two guide rollers over which the glazed cloth passes before it again returns to the impression cylinder. Two rubbing rollers or brushes are arranged in it for the purpose of more thoroughly cleansing the glazed cloth; above the cistern are two squeezing rollers to dry the cloth.

Twelfth, “the use of two or more printing rollers working one color.”

[Printed, 10d. Drawing.]

A.D. 1862, October 8.—No. 2718.

CLAVEL, PIERRE.—(*Provisional protection only.*)—"Improve-
ments in the treatment of violet colours derived from coal
tar oils."

The violet matter to be treated is mixed with "cold fuming
sulphuric acid of Nordhausen," small quantities being
added from time to time until the violet is dissolved; after
being left to repose for about half an hour the liquid is poured
into a vessel containing from twenty to thirty times the
volume of water at from 160° to 212° Faht. to the acid solution;
"the whole is then exposed for a few minutes to the action of
"a current of steam, after which it is left to cool." "The
precipitation of the violet colour is then effected by the
addition of chloride of sodium or an earthy alkali" after
which the mass is boiled by a current of steam for about half
an hour; the colouring matter thrown down is collected on
a filter and washed with cold water, "is thoroughly soluble
in hot water, and may be employed in the ordinary way for
dyeing or printing purposes." "In certain cases the cold
Nordhausen acid may be replaced in the opening process
by hot sulphuric acid of commerce, either concentrated or
diluted, the matter to be dissolved being also heated, but
the first-named substance has hitherto been found to give
the best results."

[Printed, 4d. No Drawings.]

A.D. 1862, October 10.—No. 2733.

GREEN, ROBERT ELLIS, and COCKCROFT, JOHN.—"An im-
proved amalgamation of materials forming a substance
suitable for printers' blankets, conductors used in paper-
making, packings for joints, and similar purposes."

The "application of a solution of india-rubber or its sub-
stitute to paper alone or in combination with fabrics" as
follows:—"Two or more lengths of paper are combined by
means of a solution of india-rubber or its substitutes" by
"spreading it between them and pressing them together;"
or, "a textile fabric, such as linen, cotton, or woollen," is put
on the outside with paper underneath, always making the
different folds adhere with a solution of india-rubber or its
substitutes. "For printers' blankets it must be adapted to

“ the peculiar colors used by the printer, as some colors are strongly acid, some alkaline, and others neutral.”

[Printed, 4d. No Drawings.]

A.D. 1862, November 4.—No. 2982.

REUTER, PETER WILLIAM.—(*A communication from Edward Reuter.*)—“Improvements in dyeing.”

“The use of salts or compounds of lead and alkaline solutions,” as follows:—Slaked lime is added in the proportion of one pound to every 100 gallons of water, or thereabouts, and after the same has been well mixed, the clear solution is drawn off, and “powdered oxide of lead, litharge, minium or massicote, or other salt or compound of lead” is added to it “in the proportion of about two ounces to every pound of wool or woollen fabric to be dyed,” then adding carbonate of soda in the proportion of about one ounce to every pound of wool or fabric to be operated upon. Having thus formed the bath, the wool or fabric to be dyed is placed therein, and the temperature is gradually raised to 180° F^{ah}., and after the material “has attained the intensity of color or tint,” it is removed from the bath and may be dried, but generally it is subjected to a soap bath, and afterwards to an acid bath of hydrochloric or other suitable acid, and finally, to several washings in cold water. Proportions are given, but they may be varied, and “other substances may be used in place of lime, such, for example, as baryta, and in place of the carbonate of soda, caustic soda or other alkaline hydrates or carbonates may be applied.”

[Printed, 4d. No Drawings.]

A.D. 1862, November 12.—No. 3044.

SMITH, GEORGE.—(*Provisional protection only.*)—“Improvements in obtaining coloring matter.”

These improvements are, mixing “suitable proportions of nitric acid and aniline, that is, any proportion in which the latter exceeds the former,” then heating the mixture, and adding “thereto arsenious acid until it becomes of a rich red or purple color, and the coloring matter so produced, when dissolved, can be used for dyeing or printing.” What is claimed is “the treatment with arsenious acid of the

"mixture produced by heating nitric acid and aniline together."

[Printed, 4d. No Drawings.]

A.D. 1862, November 15.—No. 3077.

ILLINGWORTH, ALFRED, and ILLINGWORTH, HENRY.—
"Improvements in washing wool and other fibres."

"In washing wool and other fibres various means have been resorted to for carrying the fibre through the wash liquid, and amongst others it has been proposed to employ blades or plates applied to endless travelling bands or chains, but it was found that the tendency of such blades or plates by the continuity of their surfaces was to produce a felting or matting effect." These "improvements consist in substituting for such blades or plates, prongs or teeth or grates which may be of a curved or other suitable form, adapted, when applied to continuous travelling surfaces, or when in operation upon the fibre, to be continually travelling in the same direction to carry forward the fibre through the wash liquid and facilitate the washing thereof, without felting or matting it." Also applying "a series of prongs to the feed end of the wash trough to act as guides or conductors to facilitate the complete immersion of the fibre in its passage to the series of prongs, teeth, or grates." The fibre is thence carried along the trough by the prongs until it arrives at the delivery end of the trough, when it is taken up by the teeth or prongs of a rotating lifting drum or wheel described in No. 75, A.D. 1853.

[Printed, 10d. Drawing.]

A.D. 1862, November 20.—No. 3117.

OLDHAM, GEORGE WILLIAM.—"Improvements in preparing
"and dyeing silk waste, flax, hemp, Indian or China grass,
"or other similar fibrous substances."

"Preparing such fibrous substances for dyeing by steeping
"and boiling them in strong soap liquor or lather, and dyeing
"such substances so prepared previously to their being dressed
"or combed, that is to say, before being made into slivers, or
"before being mixed with wool or other fibrous material or
"materials." The fibrous material to be treated as above is

put into bags or nets "about eight ounces thereof into each bag," and these bags with the material are "then steeped for about one hour (more or less) in a strong soap liquor or lather, which is placed in a boiler provided with a suitable fire-place for heating the same," and then boiled "for about two or three hours, or until the same is sufficiently softened to be in a suitable state for dyeing." It may then be either washed out or not, as preferred, and dyed in the ordinary manner (still in the bags or nets) by means of any suitable drugs usually employed for dyeing black or colours. "The soap liquor is made with about 20 lbs. of soap to about 100 lbs. of fibre."

[Printed, 4d. No Drawings.]

A.D. 1862, November 24.—No. 3152.

BARCLAY, JOHN.—(*Provisional protection only*).—"Improvements in the construction and arrangement of rollers to be used in machinery for printing textile materials or fabrics and in apparatus for drying and finishing the said materials or fabrics."

First, rollers are formed, by preference of cast-iron or other rigid material; "the periphery of each roller has formed in it a series of grooves of a dovetail figure, the greatest width being at the lower part of the groove." These grooves are filled with wood, lead, metallic alloy, or "with gutta percha or other material suitable for affixing thereto the printing surfaces." Or the rollers may be made with slots, &c. for wood, &c. "These rollers are arranged to work in colour troughs and to convey the colour on to the yarn or fabric round the printing cylinder; this portion of the machinery forms, however, no part of the present invention."

Second, a drying apparatus through which the yarn or cloth passes, consisting "of a series of rollers arranged in pairs one above another. The yarn is carried up, down, over, and beneath these rollers" and over a series of steam pipes or boxes arranged in a corresponding manner, or air is forced through a red hot pipe. Close to the cloth is a fan wheel or blower. From the drying cylinder, the yarn passes through a reed in lateral motion, and "over and under three lease rods is carried over a breast beam at the extremity of

" the machine, and down to the beam on which it is wound." The passing of the yarn over the beam flattens " the yarn to " a certain extent which causes it to wind more evenly upon " the beam than if it were passed round a roller in the usual " way."

[Printed, 4d. No Drawings.]

A.D. 1862, December 1.—No. 3221.

REUTER, PETER WILLIAM.—(*A communication from Edward Reuter.*)—"The preparation of a new compound to be used for " dyeing and printing."

This invention is " the preparation of a compound or com- " pounds of lead, which on being mixed with water will " produce an alkaline solution of lead, and also the applica- " tion and use of such compound or compounds for the dyeing " and printing of woollen fibres or fabrics." " Oxide of lead " or other compounds of lead" are mixed "with lime or " potash or carbonate of potash, or soda or carbonate of soda, " or baryta, magnesia, strontia, or other similar substances, " which on being mixed with water will form an alkaline " solution of oxide of lead. In practice it is preferred to " employ a compound consisting of one part of oxide of lead " well mixed with four parts of slaked lime made into a stiff " paste with water."

This compound " produces " a brown colour on wools.

[Printed, 4d. No Drawings.]

A.D. 1862, December 10.—No. 3312.

PRICE, ASTLEY PASTON.—(*A communication from Augustus Eisenlohr.*)—"Improvements in the manufacture or produc- " tion of blue colors."

" The subjecting any of the following salts of aniline " namely, the acetate, valerianate, lactate, benzoate, cinnamate tartrate, and oxalate, however obtained, or " mixtures of the " same in combination with roseaniline, fuchsine, or magenta, " to a temperature sufficiently elevated and sufficiently pro- " longed to produce the desired blue color." The following proportions have been found to give good results for " every " three parts or equivalents of aniline contained in the salts " of aniline before mentioned," adding one part or equivalent of fuchsine, magenta, or roseaniline, " mixing them well

“together, and heating the mixture, in preference, in a partially closed vessel to a temperature between 150° and 190° Centigrade, the temperature being maintained” until the desired blue “color is produced, which is ascertained by withdrawing a portion of the fused mass from time to time, and placing it in contact with a suitable solvent of the blue color, such as alcohol.” “The fused mass is then withdrawn and allowed to cool, and is afterwards washed with water, and, if necessary, with sulphuric or other suitable acid and water, to remove impurities from the product. The coloring matter may then be dissolved out of the residue by means of alcohol, or by any other suitable solvent, and is applicable for dyeing and printing purposes.”

[Printed, 4d. No Drawings.]

A.D. 1862, December 11.—No. 3321.

RONALD, ROBERT ALEXANDER.—“Improvements in printing textile and felted fabrics, and in the machinery or apparatus to be used therein.”

“Under one modification the printing machinery or apparatus consists of a large drum or cylinder similar to what has been heretofore employed for printing shawls and dress fabrics,” but in order to render the same suitable for printing heavy goods, as carpets, rugs, &c., “the framing inside the drum is so arranged as to admit of two beaming rollers being fitted near to a slot or transverse opening which extends across the drum and admits of the cloth being wound on to and off the beaming rollers as required.” “The beaming rollers are turned by means of a winch handle or other equivalent.”

For printing the felted cloth, ordinarily made fifty inches wide, in preference, the cylinder is made long enough to take on two pieces of cloth. When arranged “for two-piece work” there are two pairs of beaming rollers, having their inner bearings fitted contiguous to the central plane of the drum and the outer ones at the ends, so that the spindles may be conveniently got at for winding and unwinding. At the back of the drum or other convenient part is arranged a framing carrying the beams on which the cloth is primarily wound and which receive it again after being printed. The cloth is

wound off from these beams and passed on to one of each pair of beaming rollers inside the drum. The end of the piece of cloth is brought out through the opening, is passed round the drum, and is carried inside and secured to the second beaming roller. The selvages of the cloth extending round the drum are fastened down to prevent any shifting in a lateral direction, either by means of tenter hooks or catches driven into the drum, or these tenter points may be driven into bands of hoop iron or other suitable material, so as to be easily applied to and removed from the periphery of the drum. The other piece of cloth having been prepared in a similar manner the printing is proceeded with.

The printing is done by means of a curved cylinder which receives the colour from a roller rotating in or receiving colour from a trough beneath. The drum is caused to rotate "either by hand or power first in one direction and then the opposite, as many times as may be necessary to impart a distinct and sharp impression." "The colour trough and pattern cylinder are then moved along parallel with the face of the drum in order to print the other half of the piece, or if this is not required the trough is passed on to the next piece." The printed portions are then wound on the second beam and secured with a suitable holder or clip. "In order to relieve the friction of the cloth on the drum while shifting it round it is slackened off, and small rollers are inserted between the cloth and the drum to cause it to run easily." "In printing rugs according to this system they are joined together so as to form a long piece, and one half of the series of rugs are printed in the manner before described. This being done, the printing cylinder is reversed and the printing operation is repeated; by this means the two ends of the rug correspond in pattern with a central device, one half of which is formed by the first printing, and the other half by the second."

"It is proposed to print the backs of the cloths with neat patterns, so that they may be reversed when required."

[Printed, 10d. Drawing.]

A.D. 1862, December 18.—No. 3383.

LEPAINTEUR, EDMOND.—"Improvements in the fabrication of a salt for dyeing textile materials."

“Manufacturing wholesale a salt for fixing the mordants employed in dyeing textile materials, animal and vegetable, and which may be substituted for the various tartrates and for tartaric acid employed ordinarily for this purpose. To this salt, from its special affinity with the various coloring matters, has been given the name of chromogene.” It is made by “saturating at the ordinary temperature hydrochloric acid with quicklime or carbonate of lime,” 1 part of quicklime or carbonate of lime to 3 parts by weight of hydrochloric acid marking 22° on Baumé’s aerometer. The liquid thus obtained is evaporated “until it marks 45 degrees on Cartier’s acid gauge;” on standing it crystallizes. It is employed alone or combined with the various agents used for dyeing. It gives results much superior to those hitherto obtained, and produces many new and brilliant shades of colour. For instance, employed with chromate of potash, this salt produces the blue, black, and chesnut colours: with alum, the sanders and scarlet reds; with cochineal, the crimson and rose colours; with prussiate of potash, the colour called French blue.”

[Printed, &c. No Drawings.]

A.D. 1862, December 18.—No. 3387.

WILSON, WILLIAM VIRGO, and MANNING, FREDERICK ALFRED.—(*Provisional protection not allowed.*)—“The production of colouring matters.”

Mixing “aniline or its homologues with terchloride of arsenic in equivalent proportions,” and applying “heat, passing a stream of dry chlorine gas through the mixture; it becomes converted into rich colouring matter which may be extracted by methods now in use.”

[Printed, &c. No Drawings.]

A.D. 1862, December 18.—No. 3389.

PERNOD, JULES.—(*Provisional protection only.*)—“A production derived from madders called purpurine.”

“The madder is dissolved in water so as to form a fluid paste, it is then washed in water and sulphuric or chlorhydric (chlorhydric?) acid added, and then it is put to ebullition. After the mixture of madder, water, and acid has been maintained at a temperature of about one hundred

“ degrees Centigrade (equal to about 212° F.) during two or three hours, it is put into a filter to undergo a complete washing, which operation is finished when the water presents a reddish color something like wine. The strained matter is then dissolved in a sufficient quantity of water to form a fluid paste; it is then placed in an open vessel and and exposed to a temperature never to exceed 100° Centigrade. After maintaining the ebullition from two to five hours, according to the nature of the madder employed, it is then left to cool, filtered, and strained completely; the produce is then dried and reduced to a powder, and in that state delivered to the trade.”

[Printed, 4d. No Drawings.]

A.D. 1862, December 18.—No. 3395.

HOLDEN, ISAAC.—“Improvements in means or apparatus for washing wool and other fibres.”

“The giving an intermittent forward and partial retrograde action to prongs, grates, or other surfaces whilst they are employed in conducting wool and other fibres through a trough of wash liquid, to facilitate the washing of such fibres.” These prongs are fixed to bars which are at their ends formed into necks, which pass into links of two endless chains by which those prongs may have progressive motion given to them with progressive motion given to the chains. Each end of these bars is also provided with a truck or bowl which passes between fixed guides, and are thereby correctly supported whilst traversing through the trough. These bars are also provided with arms with trucks or bowls which pass into grooves formed between fixed but curved bars, by which the points of the prongs, “in addition to their progressive motion imparted by the chains,” will have given to them “an intermittent or forward and partial retrograde action.” The fibre to be washed is fed into the machine by a feed cloth or other suitable means, and having been carried through the trough by the prongs, or by grates, &c., it is thence raised out of the trough by means of a lifting drum with arms capable of protruding for a time, and then of receding within the periphery of such drum during its revolution, such as is now well understood, or by other suitable means, and thence *by an endless apron* to between two squeezing rollers. The

action of the instrument facilitates "cleansing without stringing or felting" the fibre.

[Printed, 10d. Drawing.]

A.D. 1862, December 23.—No. 3423.

BROOMAN, RICHARD ARCHIBALD. — (*A communication from Pierre Chalamel.*)—(*Provisional protection only.*)—"A new or improved coloring matter or dye."

This colouring matter is termed "imperial ruby." "The color, the normal tone of which is a cerise, or its derivative shade, is obtained by the combination of fuchsine and coral-line, or any other yellow or orange color extracted from coal." It is made by dissolving "together or separately in methylated spirit, acetic acid, alcohol or other spirit," fuschine and coralline." "The coralline predominates in quantity over the fuschine, thus, to obtain the normal tone of imperial ruby," there are taken "2 parts of coralline to 2 parts of fuchsine; these proportions may, however, be varied. Any excess of coralline in the dyeing bath tends to produce a yellower cerise, while an excess of fuchsine, on the contrary, imparts a more violet shade." "The solution of the fuchsine and coralline (whether together or separately) in alcohol or other spirit may be diluted; for example, 1 lb. avoirdupois of these products may be dissolved in 11 gallons of alcohol or spirit. This preparation is used in dyeing in the ordinary manner without the addition of any mordant. Should any mordant be used, the color preceding from the coralline does not rise on the fabric, it only rises on contact with the fuchsine without a mordant, and produces, as before stated, the imperial ruby."

[Printed, 4d. No Drawings.]

1863.

A.D. 1863, January 8.—No. 70.

MONTEITH, ROBERT THOMSON, and MONTEITH, ROBERT.—(*A communication from Georges Auguste Jules Delvaux.*)—"Improvements in the manufacture of dyes from aniline."

First, "the production of red and violet colouring matters by the decomposition of hydrochlorate or sulphate of aniline or its analogues by heat, whether those substances are used by themselves or mixed with aniline or its analogues, and whether either of the above mixtures is heated alone or after it has been mixed with sand or any other finely divided substance." On heating to the temperature of 302° Faht, a mixture of equal parts by weight of aniline and hydrochloric acid, a portion of the aniline combining with the hydrochloric acid, forms hydrochlorate of aniline, sufficient free aniline remaining to produce the red colour. Sulphuric acid may be used instead of hydrochloric acid, the temperature in this case being 482° Faht. The red is also "produced by heating dry sulphate of aniline alone to 428° Faht., but care must be taken not to go beyond this temperature, as in that case the red will not be free from violet."

Second, "the use of salts of ammonia," by heating aniline along with the salts of ammonia, such as sulphate of ammonia, from 302° to 392° Faht.

Third, "the admixture with the coloring substances" of "sand, gelatinous silicic acid, fluoride of calcium, or any other finely divided substance not liable to act otherwise than mechanically upon the substances employed in the processes." A very fine red is produced by heating one part by weight of dry hydrochlorate of aniline, and, in preference, "10 parts of sand, in preference, in a vessel not hermetically closed, and for 3 to 4 hours continuously at 302° F. When cool the product is treated with boiling water, and the color obtained, purified in the ordinary way of purifying aniline dyes." The best method of conducting this process to produce red is to heat to a temperature of 240° Faht. for 40 hours, a mixture of 69 parts by weight of dry hydrochlorate of aniline of commerce, 50 parts of aniline of commerce, and 4,000 parts of dry sand. When the mass is cool, the red is extracted with boiling water. Another method is to heat to a temperature from 230° to 248° Faht. from 25 to 30 hours in a retort, a mixture of 69 parts by weight of dry hydrochlorate of aniline of commerce, 250 parts of aniline of commerce, and 1,000 parts of dry sand, placing on the top of the mixture 1,000 parts by weight of sand. When cool, the mass is treated with lime, and a current of steam blown through, which causes all the

untransformed aniline to distil. The process will succeed if 50 parts of aniline are substituted for 250 parts of that material, but a less yield of red will be produced. Both red and violet may be produced by heating hydrochlorate or sulphate of aniline mixed with sand to about 392° Fahr.; the red is dissolved out by water, leaving the violet soluble in alcohol. These processes may be performed as follows:—2 parts by weight of dry hydrochlorate of aniline are mixed with 1 part of aniline and 10 parts of sand, and heated in a covered, but not hermetically closed vessel from 374° to 392° Fahr. for 3 hours or upwards; the red is dissolved by water, the violet by alcohol. The red may also be produced by heating hydrochlorate of aniline and aniline in a closed vessel, or by heating dry hydrochlorate of aniline in an open or closed vessel, with a thick layer of sand at the top, or by heating a mixture of dry hydrochlorate of aniline with dry sand in an open or closed vessel to a temperature from 212° to 392° Fahr. Gelatinous silicic acid, fluoride of calcium, or other finely divided substances not liable to act otherwise than mechanically may be employed in place of the sand. The sand or these substances retain the tarry matter to a great extent.

Fourth, “the production of brown colors by the decomposition of salts of aniline or its analogues by heat.” “A yellowish brown, known as ‘cuir,’ or ‘havanne,’ may be produced by heating to 482° F, in a close vessel hydrochlorate of aniline or its analogues, either dry or moistened with water. Different shades of this colour may be produced by varying the length of time for the continuation of the heat. The brown colouring matter should be treated with benzine or coal naphtha till the tar is removed, and then be dissolved in alcohol or acetic acid, when it will be ready for use.”

In the Provisional Specification is the following:—“Hydrochlorate of toluidine either alone or with toluidine or naphthaline, and either with or without water, when heated to 356° F., in either open or close vessel, produces a golden yellow. If the heat is increased to from 482° to 536° F., green is produced. Blue is produced by heating hydrochlorate of aniline or its analogues with aniline or its analogues from 392° to 482° F. in a closed vessel, with or without sand. If aniline is used, the proportions should be

“ 129 parts by weight of the hydrochlorate to 93 parts by weight of aniline. If any of the analogues of aniline are used, the proportions must be varied according to their equivalents. If the temperature is carried beyond 428° F., green is produced. The blue is soluble both in water and alcohol.” In the Final Specification it is stated “that the formation of yellow, green, and blue, from aniline or its analogues, as also the producing of red by heating hydrochlorate or sulphate of aniline with naphthaline are attended with such difficulties as to render the processes practically useless,” therefore they are not described.

[Printed, 4d. No Drawings.]

A.D. 1863, January 9.—No. 79.

HUGHES, EDWARD THOMAS.—(*A communication from Joseph Kien.*)—“Improvements in machinery or apparatus for printing or staining woven fabrics, warps, paper, and other articles.”

This invention “consists of a suitable frame of iron or other metal the sides of which are connected by tie rods and bolts;” between the right and left side of the frame there is a tie piece, and on the left side a trundle shaft or cylinder with pins to stretch the desired pattern or design, and also projecting pieces to keep the material to its full width. For some patterns the cylinder turns its full circumference, and for others only one half, the pins being regulated by a lever which slides up and down and has attached to it a handle. A table on which the material to be operated on rests, slides in grooves, and is moved on rollers with conical keys or blocks and screws, by which are regulated the pads or cushions attached to the cylinders for the purpose of giving the requisite pressure on the material which receives the pattern or design.” This table is covered with cloth, &c., over which is oil or waxed cloth, “the two cloths being kept in their proper place by a comb on the right-hand side of the table, and on the left-hand side a wooden roller also provided with a comb and ratchet to keep the cloths at full stretch. The table is also recessed at its sides in order to receive the edges of the cloths and thus regulate the tension of them as required. On the slides of the table are six small rollers, three on each side, to receive the frame when

“ the impression is being taken, shafts or spindles being
“ attached to the frame at each end, which are also provided
“ with rollers with a base to maintain the frame in its proper
“ place and pieces to arrest its motion when necessary.” This
frame “ has conical bearings to receive the moveable table on
“ which the material to be printed or stained is spread, and is
“ prevented moving in the direction of its breadth by the
“ rollers, the frame which holds the rollers being immovable.
“ On the frame is also fixed a fabric to serve as a lining and
“ prevents stains on the materials being printed. On an
“ indicator is placed a plate which is turned by a shaft and
“ handle above the framing, and also two pullies which turn
“ one to the right and the other to the left by means of bands
“ or gearing for the purpose of moving the carriage backwards
“ and forwards which carries the feeder to supply the necessary
“ colouring matter to give the design or pattern required.”
The “ feeder has four rollers with grooves to prevent them
“ getting out of their places when travelling. There are racks
“ on the slides for the purpose of drawing and distributing
“ the colours to the designs, and two frames resting on the
“ carriage or feeder which place and unplace themselves in
“ order to change the colours.” They have also “ each on its
“ own side tie pieces, which cause them to rest upon the pads
“ or cushions placed upon the feeder; there are also two
“ pressure screws on the opposite side of the tie piece to raise
“ the framing and regulate the pressure required to give the
“ design. Upon the framing is a joint made of two tie pieces
“ fastened with iron pins, to which is attached one or more
“ cylinders according to the number of colours,” these
“ cylinders being covered with woollen cloth, and having
“ on one side a spindle which dips into the colour cistern
“ when the cylinder turns and equalizes the colours. To re-
“ gulate the supply of the colouring matter the cylinders are
“ pressed against each other by screws in order to give the
“ required pressure. There are also rollers to absorb the
“ superfluous colouring matter. The said machine or appa-
“ ratus is applicable to printing the warps used in making
“ pile fabrics as well as woven fabrics, paper, druggit, felt, and
“ other similar articles.”

[Printed, 3s. 10d. Drawings.]

A.D. 1863, January 12.—No. 92.

DAWSON, DAN.—“Improvements in manufacturing ‘ma-genta’ colour or dye.”

Subjecting aniline and a solution of “arsenic acid containing from twenty to forty per cent. of water” (containing about twenty-three per cent. is preferred as answering best) to “a temperature of from 320° to 360° F., and a pressure ranging from 20 lbs. to 100 lbs. on the square inch.” “The pressure will vary by altering the proportions of acid and water.” The arseniate of aniline “a solid substance nearly white having a somewhat crystalline aspect,” is put “into a strong iron cylinder capable of resisting a pressure of about 200 lbs. on the square inch. The cylinder is provided with an air-tight fitting lid, in which a pressure gauge is inserted.” The heat is applied “either by a sand bath or a naked fire; care must be taken to keep the temperature about 345° to 350° for the space of about 12 hours,” but the time may be varied. “The pressure will get up as high as from 70 to 100 lbs. on the square inch.” The colour now produced, “it only needs taking out of the cylinder and purifying by some well-known method.”

[Printed, 4d. No Drawings.]

A.D. 1863, January 12.—No. 97.

CLARK, WILLIAM.—(*A communication from Charles Jules Usèbe.*)—“Improvements in the preparation of green coloring matter.”

Preparing “a green coloring matter derived from aniline, which is soluble, and suitable for dyeing and printing purposes, by means of a combination of reducing agents, such as hydrates and soluble hyposulphites acting on acidulated solutions of salt and rosaniline, or on the blue or violet compounds derivable from the same” as follows:—To a solution of rosaniline “in a mineral acid, such as sulphuric or hydrochloric acid,” is added “a hydrate of an acetic nature; for example, hydrate of acetylene or aldehyde for a period of from twelve to about forty-eight hours, according to the ambient temperature and the quantity of acid and hydrate employed, until the bath is of a greenish blue tint. The liquor is then weakened with acidulated water, so as to

"avoid precipitating the blue formed," and adding "an alkaline hyposulphite a little at a time, maintaining always an excess of acid in the bath, in proportion as it is neutralized by the alkali of the hyposulphite." The liquor is then boiled to facilitate the action of the hyposulphite and evolves sulphurous acid, produced by the decomposition. "The boiling liquor is then filtered in order to separate the sulphur." In this manner is obtained "a liquor of a green tint, which will be of a yellowish hue in proportion to the amount of hyposulphite used."

[Printed, 4d. No Drawings.]

A.D. 1863, January 14.—No. 117.

SCHLUMBERGER, JULES ALBERT.—(*A communication from Jean Jaques Muller.*)—"An improved process for manufacturing colours for dyeing and printing."

"A really true blue has not been obtained" from aniline, "as all the blue tints hitherto produced from aniline have by artificial light a reddish, purplish, or violent tinge," and in order to produce a true light blue which will appear blue at night as well as by day, "a salt of rosaniline, such as hydrochlorate," is mixed with a suitable proportion, according to the shade required, of acetate of aniline, or an acetate of toluidine or an acetate of any aniline "homologues." In practice mixing the rosaniline with 3 parts of aniline and $1\frac{1}{2}$ parts of acetic acid, "then neutralizing" the mixture by adding thereto an equivalent proportion, say, one part of carbonate of soda, or soda, or an alkaline base which is able to decompose the acetate of aniline and produce a combined salt with the acetic acid used. The mixture is then heated to a temperature between 180° and 210° Centigrade as long as is requisite, and "until the mixture, when looked at through a glass appears without any purplish tint." "The product thus obtained is precipitated by strong muriatic acid, and is boiled up therein;" the blue colour separates and is boiled "several times in water to free it from acid, after which it may be pressed and dried. "The coloring matter dissolved by the strong acid is precipitated with water, and will produce a blue of a second quality, but no purplish or violent tint will appear."

[Printed, 4d. No Drawings.]

A.D. 1863, January 15.—No. 133.

GRAHAM, GEORGE, and McLEOD, JOHN.—“Improvements
“ in apparatus to be used in turkey-red dyeing.”

First, “the using of condensing apparatus in connection
“ with turkey-red clearing boilers to avoid blowing off and
“ to return the products of condensation into the boiler.”
“ In the present example the condenser is a cylindrical vessel
“ of thin sheet copper, set in a tank or cistern of cast-iron
“ which is kept constantly nearly full of cold water.” The
steam, as is usual, is not allowed to blow off, but is condensed,
and the water formed is conveyed by a pipe back to the lower
part of the boiler.

Second, “the arranging of turkey-red clearing apparatus so
“ as to be heated by a steam casing, and so that the steam or
“ vapour is condensed, and the products of condensation
“ returned to the boiler.”

[Printed, 10d. Drawing.]

A.D. 1863, January 15.—No. 138.

WILLIAMS, CHARLES HANSON GREVILLE.—(*Provisional protection not allowed.*)—“Improvements in the manufacture of
“ colouring matters.”

These improvements are for producing “a red coloring
“ matter suitable for dyeing and printing,” treating “aniline or one of its homologues with acetate of mercury. It
“ is preferred that aniline or its homologue should be employed in combination with acetic acid as acetate of aniline
“ (or of a homologue thereof), or it may be combined with
“ hydrochloric or sulphuric acid as a hydrochlorate or sulphate, or the aniline or its homologue may be employed
“ in its uncombined state. The substances employed should
“ be mixed together and heated until the color is formed.”

[Printed, 4d. No Drawings.]

A.D. 1863, January 16.—No. 147.

MOEGLER, MARTIN.—(*Provisional protection only.*)—“Machinery for printing several colours in succession on the
“ same surface.”

This machinery consists “of as many different rolls as there
“ are to be colours in the patterns to be printed on the fabric.

“ Each roll has engraved on it or otherwise carries the design it is to print. A separate colouring roller and apparatus for distributing the color is provided for each of the printing rolls, as also a clothed roller for pressing the fabric against it.” The fabric to be printed is first rolled upon a roller fitted at one end of the machine; it is drawn over a guide roller, then between the first printing roll and its pressing roller, whereby the design on such printing roll is printed, say, in blue; the fabric is then drawn between the second printing roll and its pressing roller, when, upon another part of the fabric not covered by the previous colour, the design upon the second printing roller is printed in a different colour, say, red, and so on in succession to receive impression from as many printing rolls as there are different colours in the pattern to be printed.

[Printed, 4d. No Drawings.]

A.D. 1863, January 17.—No. 151.

LIGHTFOOT, JOHN.—“Improvements in printing and dye-
ing textile fabrics and yarns.”

“The use of metallic salts or their oxides, either alone or combined with chlorate of potash, and then mixed with a salt or salts of aniline or mixtures with any analogous homologues or isomeric compounds, either singly or mixed together, as well as the process or series of processes” afterwards described “for the production of a black dye or stain.”

“Take one gallon of water and dissolve it in 4 oz. chlorate of potash;” to this add by preference 8 oz. of aniline, “previously combined with 8 oz. hydrochloric acid at 32° Twaddell.” After stirring well, add “1 part of acetic acid and 8 oz. measures of perchloride of copper at 88° Twaddell, and 4 oz. salammoniac, or an equivalent quantity of other suitable alkaline chloride.” “Steep the fabric or yarn in this solution, wring out and dry, then expose the goods in a room from 60° to 70° F. for two or three days; the goods are now passed through water alone or a solution containing alkaline or metallic salts.” The alkalies and alkaline earths may be used for raising the black, or the goods after printing and dyeing are passed “through a box containing rollers supplied with ammoniacal gas,” in preference (“when the black is printed along with steam colours prior

"to steaming the goods"). "When the black is printed along with 'madder' or 'garancine' colours they are aged or exposed in a room at from 60° to 70° F. for three days, and dunged, dyed, washed, and passed through a solution of soap or dilute hypochlorite of lime." For printing on fabrics or yarns, "take 1 gallon of starch paste (containing 1 lb. of starch per gallon) or other suitable thickening ingredient, and dissolve in it 4 oz. chlorate of potash and 8 oz. aniline, previously combined with 8 oz. hydrochloric acid;" then "add four ounce measure of perchloride of copper at 88° Twaddell, and 8 oz. salammoniac, or an equivalent quantity of other suitable alkaline chloride." After printing this colour it is aged for 3 nights and raised in water alone, or weak alkali, or soap or hypochlorite of lime as before. In place of chloride of copper other metallic salts may be substituted, as antimony and iron, which are employed in proportions equivalent to the proportion of copper named. The red prussiate of potash may be used as a substitute for other metallic salts, and it is used in the proportion of 4 to 6 oz. to 1 lb. of a salt of aniline, adding to each gallon of colour 2 ozs. oxalic or other suitable acid. "The material to be dyed or printed must be first aged, and afterwards steamed 30 to 50 minutes." In some cases the cloth is padded "in a solution of any of the metallic salts named, either separately or mixed together," and dried, and printed, or padded with a thickened salt of aniline with chlorate of potash; aged 3 or 4 nights and finished as previously. Or the cloth is padded in a solution of any of the metallic salts named before, and the oxide of the metal precipitated into the cloth by passing through a solution of alkali, and washed, dried, and proceeded with as before. By the analogues of aniline are meant naphthylamine or toluidine, and where certain shades of black are required, a mixture of aniline with these analogous bodies is employed.

[Printed, 4d. No Drawings.]

A.D. 1863, January 21.—No. 192.

CARO, HEINRICH, and DALE, JOHN.—"Improvements in obtaining colouring matters, part of which improvement is also applicable to dyeing and printing."

First, "treating colouring matters derived from aniline with the substance known as acroleine. "The proportions in which the substances are to be combined may be varied," "To obtain a soluble coloring matter from aniline red suitable for dyeing, one part by weight of crystallized magenta is dissolved in a cold mixture of ten parts of water and twenty parts of sulphuric acid 1.84 s. g.; one half part of acroleine is then gradually added, and the red dye is almost immediately converted in a purple shade, by allowing the mixture to stand, say, for twenty or thirty minutes, a blue is produced, and by a still longer action a green tint is obtained. These changes may be hastened by the cautious application of heat. The passage from one of these tints to another may be arrested at any time by neutralizing the free acid contained in the mixture with caustic or carbonated alkali;" the new color is precipitated ready for use after the ordinary manner of dyeing or printing with aniline colours." In treating mauve, "one pound of dry mauve of aniline purple" is dissolved in two gallons of spirits of wine, gradually adding three pounds of sulphuric acid, sp. gr. 1.84, after which add two pounds of acroleine, and proceed as above.

Second, treating goods dyed or printed with aniline colours with acroleine by immersing them in a cold, weak, slightly acid solution of the same until the desired tint has been obtained.

Third, "treating mauve or aniline purple with aniline and benzoic acid." As an example, 4 parts of mauve and 4 parts of aniline are heated to about 390° Faht. for about half an hour, then 1 part of benzoic acid is added, the temperature gradually raised to about 390° Fahr. and kept so for about two hours, and the mass is boiled out repeatedly with weak muriatic acid, dried, and dissolved for use in spirits of wine.

[Printed, &c. No Drawings.]

A.D. 1863, January 22.—No. 199.

PENNEY, ROBERT.—"A solution or mixture for 'fixing' certain colors employed in printing calico and other fabrics."

This solution or mixture consists of a material for fixing colors employed in printing calico and other fabrics, which

“are produced by means of ‘catechu,’ and usually called ‘catechu colors,’ made as follows:—“Take of the ordinary chloride of calcium of commerce (which may be made by saturating spirits of salt with quicklime in a powdered state) 3, 4, 5, or other number of parts, and mix it with 1 or other required number of parts of nitrate of copper as 80 degrees or other required strength, or of chloride or muriate of copper, either instead of nitrate of copper or in combination therewith, such admixture to be made whilst the calcium is in a heated state, and then filtered for use.” These parts must be varied according to the depth, shade, or tone of color to be treated.”

[Printed, 4d. No Drawings.]

A.D. 1863, January 24.—No. 219.

BOOTH, EDWARD, BOOTH, GEORGE, and SWALLOW, ANDREW. — (*Provisional protection only*).—“Improvements in the mode of fixing coloring matter on cotton, silk, wool, and other fabrics and materials, and” “in finishing such like and other textile fabrics and yarns.”

“The use of a solution of spirits of salt, lime, and nitrate of copper mixed together in certain proportions, according to the depth of color required,” as a substitute “for nitrate and acetate of copper and other acids now in general use for fixing catechu and other coloring matters in printing and dyeing processes; and for stiffening and finishing textile fabrics or yarns,” using “spirits of salts and a solution of lime mixed in certain proportions,” which is “applied to the fabrics or yarn in the ordinary manner.”

[Printed, 4d. No Drawings.]

A.D. 1863, January 29.—No. 271.

WILLIAMS, CHARLES HANSON GREVILLE.—“Improvements in the manufacture of red coloring matters.”

Heating “two equivalents of aniline or its homologues with one equivalent of phosphate or acetate of mercury; it is preferred that the aniline or its homologues should be in combination with acetic acid as acetate of aniline (or a homologue thereof); or it may be combined with hydrochloric, nitric, or sulphuric acid,” or “in an uncombined

“state or partly in the state of a salt and partly in an uncombined state.” In preference the process is conducted as follows:—The mixed ingredients are put into a still with an agitator, the heat is raised by a steam jacket until the mixture rises to about 240° Fahr., and the heat “is maintained as long as any water distils away.” As much aniline is added from time to time as the water which distils away. As soon as the water has all been removed the temperature is “raised to 320° F. for two or three hours, when it may be increased to 360° F.” “as long as the color of the mixture appears to increase in intensity,” observed “by rubbing from time to time a little of the contents of the still upon a white porcelain surface. The time required for the whole operation is generally about 48 hours. The thick treacly mass remaining in the still is to be distilled with water to recover the aniline unacted on, and the colouring matter may be precipitated by means of common salt.” Also obtaining a red color by heating a salt of aniline “or its homologues, such as the sulphate, hydrochlorate, or nitrate with uncombined aniline and arsenious acid.” In preference mixing together 1 equivalent of sulphuric, muriatic, or nitric acid with two equivalents of water and adding 3 equivalents of aniline or its homologues and 1 equivalent of arsenious acid, and heating them in a still with an agitator, and proceeding with the process in the same way as has been “described for the phosphate and acetate of mercury and a salt of aniline.”

[Printed, 4d. No Drawings.]

A.D. 1863, February 3.—No. 300.

SMITHIES, CHARLES, and SMITHIES, GEORGE LANCELOT.—“Improvements in preparing and bleaching ‘rheea’ and other fibrous materials and fibres, which improvements are also applicable to bleaching yarns or piece goods.”

“The combination and arrangement of the various processes and the apparatus and appliances to be used therein” as follows:—The fibres, &c., after being cleansed and opened by scutching machinery, are placed in trays, skips, or baskets of galvanised iron, &c., and immersed in cold soft water in vats with removable grids at the bottom for about 24 hours, when the water is withdrawn, and the vats refilled with clean soft water, and the whole “maintained at a temperature of

" from 90° to 100° F. for 24 hours by passing steam " into the vats. " The fibrous materials are then removed and " passed between grooved or fluted rollers under a suitable " pressure," and " are then treated with vegetable, animal, " or mineral oils if necessary, and replaced in trays, &c., as " before, but provided with partitions to keep the fibres " straight, and the whole placed in an air-tight chamber or " vat having a removable grid," &c. The air is exhausted, and the bleaching liquor consisting " of a solution of caustic " soda or other caustic alkali is admitted at the bottom " until the " chamber is filled, and the materials are to remain " thus saturated for about 12 hours at a temperature of " 120° to 212° F.," after which the air is admitted to the chamber, the waste liquor drawn off and the materials are " subjected to the action of a solution of soap and soda, or " caustic soda, or other alkali until the colouring matter has " been removed," when the " saponaceous matters are re- " moved by the admission of cold soft water into the vat or " chamber, and after that steam or superheated steam is " passed through the material until it is perfectly white, " lustrous, open, and nearly dry." In " bleaching yarns and " piece goods plain instead of grooved or fluted rollers are " used to extract the water and dirty matter, and in bleaching " piece goods the trays, skips, or baskets are dispensed with."

[Printed, 4d. No Drawings.]

A.D. 1863, February 5.—No. 327.

INGHAM, EDWARD.—(*Provisional protection only.*)—" An im- " proved apparatus for and means for dyeing wool in the " sliver, from which ' mixture yarns ' may be drawn."

" Heretofore what are termed ' mixture-yarns ' have been pro- " duced by drawing from two slivers, the one plain or undyed " and the other of any desirable colour," but this invention " consists in dyeing slivers in such a manner that ' mixture- " ' yarns ' may be drawn from a single sliver ;" for this pur- " pose a square block of wood is preferred, near the corners of " which are fixed four iron rods having screws at their ends ; " across this block and at suitable distances apart are placed a " number of rails or bars of wood ; " a number of frames of " wood are provided corresponding to the size of the block, " and consisting of a number of bars of rails of any required

“ width, laid parallel to each other and kept at suitable distances apart by transverse rails. Upon each of these frames (across the bars) is wound a quantity of wool in the sliver; “ the frames (and wool) are then laid upon the block, with “ their bars or rails parallel, and having placed a suitable “ number of the frames one upon the other.” There is laid “ on the wool of the uppermost one a number of bars or rails “ (as described with the first block) parallel and corresponding “ with the bars or rails in the said frames, the whole being “ covered by a second block (similar to the one first described) “ having four holes therein through which the screwed ends “ of the rods pass.” Nuts are “ now screwed tightly on to “ the ends of the rods, drawing the two blocks towards each “ other, thus tightly pressing or squeezing the frames, bars, “ or rails, and the wool in sliver thereon. The apparatus is “ then removed into the dye vat where the whole undergoes “ the process of dyeing.” The wool at the parts where the bars or rails meet will not be dyed by reason of its being nipped tightly between the bars or rails of said frames, and on being unwound from the frames will have alternate coloured and plain portions. The blocks or frames may be made of metal in place of wood.

[Printed, 4d. No Drawings.]

A.D. 1863, February 7.—No. 344.

MALLISON, JAMES, junior.—(*Provisional protection only*).—
“ Improvements in the process and method of dyeing yarns.”

Dyeing yarns whilst in an extended state, as in sizing and dressing machines, so that they may be dressed and wound on to the finished or weaver's beam in a dyed state, whereby the subsequent dressing (to which warps dyed in the usual manner are submitted) is dispensed with. “The process of “ dyeing may either be conducted during the operation of “ sizing and dressing, by causing the yarns to pass through a “ trough in which the dye is mixed with the size, or the yarns “ may first be passed through a dyeing trough and then “ removed to a sizing and dressing machine, or vice versa. “ If required, two troughs (or one subdivided) may be employed on the sizing machine wherein the dye and size may “ be kept separate, the chief feature being that the dyed

" warps will require no further dressing than the one in the usual sizing or dressing machine."

[Printed, 4d. No Drawings.]

A.D. 1863, February 10.—No. 367.

WHITAKER, WILLIAM, and TONGUE, WILLIAM. — "Improvements in apparatus and processes for steeping, boiling, washing, bleaching, and dyeing fibrous materials, or slivers, slubbings, rovings, yarns, or woven fabrics of the same."

"The materials to be operated upon are first laid in stricks or hanks in trays having perforated gauze, latticework or canvass bottoms, or otherwise formed so that they will support the materials laid in them, and allow of the free circulation of the operating liquid through them." "These trays are also furnished with wood, metal, or other partitions, perforated or plain." It is desirable to furnish these trays with holding pikes or pins. A series of such trays filled with fibrous materials are then placed in a skeleton frame or cage, which it is "desirable to secure tightly in the frame by screws or other means, and the frame filled with the materials to be operated upon is then raised, carried over, and lowered into the steeping, boiling, washing, bleaching or dyeing apparatus by a travelling crane or other lifting apparatus." This apparatus is constructed as follows:—"Within a vessel or tank containing the liquid intended to operate on the material is arranged a framework, to which an up-and-down motion is communicated, and this framework supports a casing within the tank, but open at the bottom, a space being left between the casing and the vessel or tank," but the casing is so constructed that the trays fit within it and move up and down. The heated liquid is constantly circulated through the materials by having valves in the casing. In order to facilitate the lowering and raising of the frame and trays with their contents in the vessel or tank, it is preferred "to give motion to the framework and casing within the vessel or tank from below; this may be accomplished by means of a rod passing through a stuffing box in the bottom of the vessel or tank," or by a reciprocating bar together with rods moving in vertical guides, or two

tanks may be worked in conjunction, with a rocking shaft and beams, one set of frames moving up whilst the other set move down.

Much of the machinery is described in No. 2036, A.D. 1859, and in No. 2826, A.D. 1861; neither of these Specifications will be found in the present series of Abridgments, as they relate only to processes preparatory to spinning.

[Printed, 2s. 6d. Drawings.]

A.D. 1863, February 13.—No. 390.

ROBERTSON, JAMES. — “Improvements in apparatus or
“ means for printing woven fabrics by blocks.”

First, “printing of woven fabrics by means of blocks
“ suspended and with their weight more or less counter-
“ balanced.”

Second, “using of sliding roller frames” for “stretching
“ woven fabrics which are being printed by means of blocks.”

Third, the carrying forward of woven fabrics which are being
printed by blocks, by driving a number of the guide rollers
and without passing the fabric between nipping rollers.

In carrying out the first part of the invention, the block is
suspended in connection with counter weights, which can be
adjusted to balance as much of the weight of the block as is
not required in producing the impression. The suspending
arrangements are also such as to leave the manipulation of the
block very completely under the control of the printer, whilst
they admit of his dipping the block in the sieve or colour trough
with ease and convenience. “The beam of fabric to be printed
“ is placed in the usual way beneath the printing table and
“ the fabric drawn thence passes up and round a horizon-
“ tal roller at the higher edge of the table.” The fabric then
passes over the slightly inclined surface of the table, and
afterwards over various guide rollers arranged to keep the
printed surface untouched through a space sufficient for dyeing
it. It is when passing round the first roller that the fabric
receives the impression from the principal block, the impres-
sion of the second or ground block (or blocks) being applied
in the usual way upon the inclined part of the table.

[Printed, 1s. 4d. Drawings.]

A.D. 1863, February 23.—No. 493.

DICKINS, THOMAS, DICKINS, ALBERT LUNGLEY, and HEYWOOD, HARVEY.—“Improvements in ornamenting plush and other such textile fabrics.”

Taking “the dyed woollen, plush, or other such fabric, and “having adapted it to a flat surface,” applying “metal or “other plates to its face, and” fixing them “thereon in any “required positions by weights or by nailing, and thus certain “portions of the fabric are protected,” and with a hand brush applying “any desired dyeing material to those parts of the “fabric which are not covered by the above-mentioned plates, “the result of which will be a pattern in two colours,” and “the ends only of the fibres constituting the face being “tinted, leaving the back of the original dyed colour; any “subsequent operations of the dyeing process, if required, are “conducted after the ordinary manner.” In place of applying the dyeing material by means of a hand brush, “if “desired, a rotatory or other brush, and driven by power, “may be used.”

[Printed, 4d. No Drawings.]

A.D. 1863, February 25.—No. 517.

GATTY, FREDERICK ALBERT.—“Improvements in printing “and dyeing cotton and other fabrics.”

“Producing a black colour, either in combination with “other colours or alone, on cotton or other fabrics,” as follows:—When mordants are employed with the dye, eight ounces of bichromate of potash are dissolved in every gallon of acetate of alumina, commonly called red liquor, at 10° of Twaddell’s hydrometer; “any other soluble chromate will “answer the purpose, but the bichromate of potash is preferred. The cotton or other fabrics are impregnated with “this mixture by padding or otherwise, when they are dried “and then printed with a thickened solution of a salt of “aniline or other similar tar product;” in preference one gallon of water is thickened with 1 lb. of starch, &c., and when cold there is added 1 lb. of aniline previously “mixed “with 1½ lbs. of muriatic acid of commerce and 1 lb. of “water;” other acids will answer the same purpose. “After

“ the fabrics are printed they are treated in the same way as
 “ mordanted fabrics which are intended to be dyed with
 “ madder, garancine, or other coloring matters.” “ To pro-
 “ duce the same black upon white or turkey-red grounds
 “ alone or printed at the same time with other colours or
 “ with mordants, the turkey-red fabrics are padded,” &c.,
 with “ a solution of 8 ozs. of bichromate of potash neutralized
 “ by 8 ozs. of carbonate of soda or other suitable alkali per
 “ gallon of water, dried, and then printed with an aniline
 “ colour prepared as above described.” “ After printing
 “ where no mordant has been used or printed with the black,
 “ the fabrics are only washed and cleansed in water in the
 “ ordinary way. When a mordant has been printed with the
 “ black the fabrics must be treated according to the require-
 “ ments of such mordants without reference to the black.”

[Printed, 4d. No Drawings.]

A.D. 1863, February 26.—No. 541.

PRICE, ASTLEY PASTON. — (*A communication from Augustus Eisenlohr.*)—“ Improvements in the production and manufac-
 “ ture of blue colours.”

Employing “ acetates, citrates, succinates, racemates, ma-
 “ lates, valerimates, benzoates, cinnamates, tartrates, and
 “ oxalates of potash, soda, and ammonia, in conjunction with
 “ aniline, roseine, or roseaniline;” in preference employing
 “ the benzoates or acetates of soda or ammonia, or mixtures
 “ of the same with aniline or roseine;” and in preference the
 proportions are “ 1 part of benzoates or acetates to 3 parts of
 “ roseaniline and nine parts of aniline.” After the mixture
 has been well incorporated it is heated to about from 160° to
 215° C., and the temperature is “ maintained until the desired
 “ blue color is produced, which is generally effected in about
 “ from two to three hours.” “ The fused mass resulting
 “ from this operation is then treated with sulphuric or with
 “ muriatic acid to remove the excess of aniline and other
 “ impurities. The coloring matter thus obtained may be
 “ dissolved in alcohol or any other suitable solvent, and is
 “ applicable for dyeing or printing purposes.”

[Printed, 4d. No Drawings.]

A.D. 1863, March 2.—No. 578.

TOLHAUSEN, FREDERICK.—(*A communication from Achille Clément.*)—(*Provisional protection only.*)—"Improvements in
" cloth blankets and other fabrics to be used in machinery for
" printing fabrics, paperhangings, and letter press."

These improvements relate to "the general and systematic
" use of flock, floss, fancy or waste silks for those cloths or
" fabrics which are employed" as above, in place "of cotton,
" wool, and other substances which have hitherto been used
" for the same purposes." "When used for printing or
" inking rollers or the like, the improved cloth is made in
" two layers of twilled fabric, of silk floss, and other similar
" material, which are united by a layer of india-rubber laid
" on in the liquid state when used for printing blankets
" ('doubliers'), which are lying under the fabrics and papers
" in the process of printing; a plain shed will answer the
" purpose, the material employed in both cases being silk of
" the kinds described." The general object being to impart
" to the "fabrics used in printing machinery a more permanent
" elasticity and durability, and to prevent them from harden-
" ing, felting, and being injured by the effect of heat."

[Printed, 4d. No Drawings.]

A.D. 1863, March 11.—No. 660.

MONTEITH, ROBERT THOMSON, and MONTEITH, ROBERT.
—(*A communication from Georges Auguste Jules Delvaux.*)—
"Improvements in making dyes from aniline and its ana-
" logues."

Aniline red "is mixed with a dry salt of aniline or one of
" its analogues, and heated" in a vessel "either hermetically
" closed or not, to a temperature of 390° F. and upwards, for
" as long a time as may be necessary to form the dye of the
" required shade; this will be from one to six hours. The
" dyes thus produced are shades of brown, called in France
" 'cuirs' or 'havanne.'" "The brown dye thus formed may
" be separated into two brown dyes of different shades, a part
" being soluble in boiling water, and nearly all the rest in
" alcohol," and it is by means of water and alcohol that they
" are obtained or separated. "These brown dyes may be pro-
" duced by using various proportions of hydrochlorate of

" aniline with aniline red." Equal proportions of aniline red and hydrochlorate of aniline heated for from one to three hours at a temperature of 480° Faht. " give excellent results." Other proportions giving good results are given. When the operation is at a low temperature, say from 350° to 400° Faht. the residue, a dark coloured fused mass, " is capable of being " dissolved in boiling water to a great extent; the residue " after filtration, being dissolved in alcohol, gives a brown " dye." The clear liquid, made alkaline in preference by ammonia, gives a paste which, when neutralized in preference by acetic acid and dissolved, gives a brown dye. The clear liquor from this paste, after slightly acidifying by, in preference, acetic acid, dyes a scarlet, " and other modified shades " of red, according to the temperature and length of time of " heating." This process, conducted at higher temperatures, gives different shades of colour. Brown dyes are also produced similarly from aniline blues and violet, but the processes are not preferred nor are they claimed.

[Printed, 4d. No Drawings.]

A.D. 1863, March 13.—No. 686.

WYLDER, ALBERT, and THORNTON, CHRISTOPHER.—(*Provisional protection only*).—" Improvements in printing and " dyeing woollen fabrics."

First, " the use of a new substance as applied to the printing " of woollen fabrics." This new substance is " deoxidized " indigo in combination with gum or other thickening " matter."

Second, " in producing colours upon woollen goods," in the first place printing " them with the said deoxidized indigo " or other printing material," and then dyeing them " to any " desired colour."

[Printed, 4d. No Drawings.]

A.D. 1863, March 14.—No. 700.

BOALER, WILLIAM.—(*A communication from Robert Hodgson Gratrix*).—(*Provisional protection only*).—" Improvements in " the preparation of coloring matters for dyeing and print- " ing."

" The application of gases to aniline, either alone or in " conjunction with acids or metallic salts, for producing

"coloring matters from aniline or other similar substances." The colouring matter produced in this manner may also be treated "by adding thereto an excess of aniline, so as to produce further and other shades. This mixture may be treated either with or without heat, and with acids or alkalies, according to the shades required." The gases referred to above are nitrous gas evolved when nitric acid and mercury are brought together, and chlorine gas, "when sulphuric acid, chloride of sodium, and oxide of manganese are put together, and heat is applied," and "other gases may also be used." "As an example of the mode of carrying out this invention," take 8 ounces of mercury, and place the same in a retort which is put in connection with a Woulfe's bottle, into which 6 ounces of aniline has been introduced. "The aniline covers the mouth of the retort, and 10 ounces of nitric acid are added to the mercury in the retort, the retort being at first kept cool with iced water so as to render the action less energetic." The red gas is allowed to pass through the aniline. The temperature of the retort is gradually increased; when gas ceases to be evolved, the aniline is removed and an equal measure of nitric acid is added very gradually, to it, the bottle being immersed in iced water to prevent heating. When the mixture has passed from a brown to a red and afterwards to a green bronze colour, it is heated carefully "until the desired result may be obtained." The mixture now poured into a little cold water assumes the "appearance of dark pitch," which, boiled in water, gives a purple-blue colour. From the proportions of gas and acid used, different shades, from Magenta to blue, without boiling, are produced; with boiling, in some cases, "a yellow colour will be produced."

[Printed, 4d. No Drawings.]

A.D. 1863, March 17.—No. 717.

DE LAIRE, GEORGES.—(*Partly a communication from Charles Girard.*)—"Improvements in the manufacture of brown coloring matters."

Treating aniline, red, violet, or blue dyes with a salt of aniline. "The following is a convenient way in which to conduct the process:—Take 4 parts anhydrous hydrochlorate of aniline and 1 part of dry aniline, violet, or blue

“ dye, which add to the hydrochlorate as soon as it has become fused. When the aniline dye has entirely dissolved the temperature of the mixture is rapidly raised to the boiling point of the hydrochlorate of aniline, about 240° centigrade. The mass is maintained at that temperature until its color, which seems at first to undergo no alteration, changes suddenly to brown.” “ The operation lasts one or two hours and may be regarded as complete when yellow vapours are observed to condense on the sides of the apparatus, at the same time a strong and altogether characteristic smell of garlic is perceptible.” “ The brown color thus obtained is soluble in water, alcohol, and acids, and may be employed at once in dyeing and without any previous treatment. It may also be purified by precipitating it from its aqueous solution by common salt.” “ In place of employing aniline dye already formed the material for producing the dye may be substituted, as, for example, the arseniate of aniline (which treated by itself yields aniline red) may be treated with the hydrochlorate of aniline, and the brown dye will thus be produced.” In the Provisional Specification red aniline dye is said to be used in place of violet or blue dye, but the Final Specification states “ that the production of a brown color from this material is too costly, the value of the red dye being too great to commence with.”

[Printed, 4d. No Drawings.]

A.D. 1863, March 18.—No. 733.

WELCH, JOHN DAVIS, and WELCH, ALFRED PHIPPEN.—(*Provisional protection only.*)—“ Improvements in bleaching and “ in reducing and brightening the color or tone of dyed straw plaits and straw.”

Subjecting “ the straw plaits or straw to the action of vegetable dyes dissolved in boiling water, for instance, to a solution of cudbear and shumac in equal proportions, or to any other vegetable dye, according to the tint or color required.” “ After the straw has taken up the dye,” it is proposed to subject it to the action of a hot solution of carbonate of potash or salt of tartar about two parts, salt of sorrel about half a part, and oxalic acid about one part to each gallon of water, which should not be allowed to reach the boiling temperature. “ After being treated for one hour

"by the above solution," "the straw plaits or straw should be subjected to the strong fumes of burning brimstone in an ordinary steam chamber for about two hours, after which it should be allowed to dry, when the straw will be found to have acquired" "light shades and neutral tints." "The proportions of the carbonate of potash may be varied, the object should be to employ just sufficient potash or tartar as to nearly neutralize without destroying the acid."

[Printed, 4d. No Drawings.]

A.D. 1863, March 25.—No. 780.

STUART, GEORGE.—"Improvements in bleaching jute fibre."

These improvements are "the bleaching of jute fibre by immersing it twice or oftner in a solution of a chloride," (chloride of lime) "each such immersion being followed by an immersion in dilute sulphuric acid." The jute is first washed with an alkali to remove grease, &c., and next immersed in a solution of chloride of lime of 3° to 4° Twaddell's hydrometer for "six to eight hours, or longer if it is not found to be weakened." The jute is then drained or squeezed, washed in pure water, and immersed "in dilute sulphuric acid of a strength of about six degrees," for about six or twelve hours, when the acid is drained or squeezed out, washed in pure water, and immersed a second time in a solution of chloride of lime "say from two and a half to three and a half degrees, and in this solution it may remain for from four to six hours. After being drained or squeezed and washed as before, the jute is immersed a second time in dilute sulphuric acid as before, remaining immersed for three to four hours, and being thereafter drained or squeezed and washed." If the jute is not then white enough it is immersed a third time in a solution of chloride of lime a little weaker than before, and afterwards in dilute acid, "being finally drained or squeezed and washed."

[Printed, 4d. No Drawings.]

A.D. 1863, March 26.—No. 795.

DAVIES, GEORGE.—(*A communication from Louis Charles Emile Vial.*)—"Improvements in engraving upon metals."

Amongst other purposes, this invention can be applied to engraving rollers for calico printing.

This invention is based:—1st. On the precipitation of metallic salts by metals. 2nd. On the affinity of acids for metals. 3rd. On the phenomena of electro-chemistry.

The improvements are:—

1st. Drawing on paper (to be afterwards transferred by moisture and pressure), or drawing on metal with a metallic ink susceptible of precipitation on another metal by contact. The design is thus formed in metal precipitated on the ground metal, “and it is only requisite then to ‘bite in’ with the “ ordinary acids to have an engraving.”

2nd. Reproducing old engravings.—According to one method, the original is soaked in a metallic solution, and the drawing is transferred to the plate by simple pressure; the ordinary acids are then used to bite in. One metal is attacked and the other is untouched. The original may be soaked in a solution of an alkaline sulphuret or chloride or similar salt.

According to another method the old engraving is transferred to steel or zinc by means of a soap and then plunged into an acid bath of sulphate of copper.

3rd. Tracing on metal, or transferring an impression, and engraving this transfer as described above. Drawing on steel with China ink so as to roughen it in parts which are bitten by acid sulphate of copper solution.

Electro-deposition of copper on to steel may be used to obtain copper as a resist for biting in.

[Printed, &c. No Drawings.]

A.D. 1863, March 27.—No. 803.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Jean Henri Chaudet and Firmin Natalis Thuillier.*)—“Improvements in machinery for scouring wool.”

First, “the general arrangement and combination of machinery.”

Second, “the employment in such machinery of a fork for raising the wool out of the trough, of a guide behind the fork, of rollers round which the raising fork travels, and of a cam for raising it.”

“The wool is supplied by a feeding apron or otherwise into one end of a long trough, and is taken hold of by a series of rakes or forks which are jointed to cranks carried by trans-

"verse shafts supported by uprights which rise from the trough." Motion is communicated to the transverse shaft as follows:—The last transverse shaft is bent at one extremity and carries a pulley which receives motion from a belt passing over another pulley mounted on the same shaft as the main driving pulley. The motion thus imparted to this transverse shaft is transmitted to the other transverse shaft by means of bevil gearing and a longitudinal shaft. The wool taken hold of by the rakes or forks "is conducted to the further end of the trough, where it is again taken hold of by another fork which raises it out of the trough or on to an apron, which leads it away to be pressed." "This last-named fork is jointed to an axle which passes through the fellies of two toothed wheels which receive rotary motion from pinions mounted on the principal shaft. The fork and a cam for raising it out of the trough revolve round two rollers; the fork is returned to the trough by a guide fixed to the sides of the trough; the operation is repeated as before, and so on successively."

[Printed, 8d. Drawing.]

A.D. 1863, March 28.—No. 808.

GOODE, BENJAMIN WILLIAM.—"A new journal axle or bearing particularly applicable to rolls."

This invention consists in the construction and application of a journal axle or bearing particularly applicable to rolls as follows:—The journal axle or bearing is "a hollow circular piece of iron, steel, brass, or other metal," though in preference "it should be made of gun metal; this is turned true, and has on one side a flange projecting at right angles from its centre. The said journal axle or bearing slides on and is attached to the solid mandril by means of a plinth correctly fixed in the mandril and the whole is fastened completely by the nut and screw at either end of the solid mandril." By the use of this journal axle or bearing "rolls, plain or with patterns cut or embossed upon them, may be changed with great facility without being obliged to take out the screws and brasses as in the present usual arrangement," and it is particularly applicable to rolls, rollers, or other machinery where exact action is necessary and where

frequent changing of rolls may take place, as for calico-printing rolls and rolls for printing paper, leather, &c.

[Printed, 10d. Drawing.]

A.D. 1863, March 30.—No. 821.

NEWTON, WILLIAM EDWARD.—(*A communication from David Clovis Knab.*)—A “process for producing yellow coloring

“ matters, and other colors which may be derived therefrom.”
“ Take 100 kilogrammes of naphthaline, and boil the same
“ for a few hours in an acid solution composed of 200 kilo-
“ grammes of water and 20 kilogrammes of nitric acid, 34°
“ Beaumé.” “The naphthaline must be kept well stirred
“ whilst dissolving.” The mother liquor is drawn off, “and
“ the naphthaline will then present the appearance of brown
“ crystals. These crystals are now to be well washed in
“ cold water to remove the acid.” “To obtain a yellow
“ solution of colouring matter the crystalline product is to be
“ treated with boiling water, to which is added 5 kilogrammes
“ of liquid ammonia. The solution thus obtained is to be
“ filtered and subsequently evaporated to a concentrated state.
“ The concentrated solution must in like manner be filtered,
“ and when cold it will be ready for use.”

[Printed, 4d. No Drawings.]

A.D. 1863, April 4.—No. 859.

PERKIN, WILLIAM HENRY.—(*Provisional protection only.*)—

“Improvements in the manufacture of red and orange coloring matters.”

To two equivalents of hydrochlorate of naphthylamine add one equivalent of nitrite of potash, and one equivalent of potash, “immediately chloride of potassium is formed, and
“ one equivalent of nitrous acid is left to act on two equivalents of naphthylamine, the required colouring matter is
“ precipitated it may at once be used as a pigment for printing, or it may be dissolved in alcohol and used as a dye.”
The colour is improved by purifying it by washing it with water, and crystallizing it from alcohol or other solvent; to produce the purified pigment, precipitating a solution of the purified colour by means of water. Other salts of naphthylamine may be employed, and soda and its nitrite may be employed

in place of potash and its nitrite. "The pigment above-mentioned is red, but as a dye the color produces an orange stain." A similar colouring matter is produced by treating sulpho-naphthylamic acid with an alkaline nitrite and an alkali. "A more or less imperfect, result may also be obtained by treating sulpho-naphthalamic acid with nitrous acid in a free state."

[Printed, 4d. No Drawings.]

A.D. 1863, April 7.—No. 879.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from François Magny and Alexandre Cottais.*)—"Improvements in reproducing or obtaining fac-similes of the veins, pores, knots, and figures of wood upon paper and other surfaces." A piece of wood or plank, "the veins, pores, knots, and figures" of which it is desired to copy, is covered with a coating of paint which penetrates the pores and veins thereof;" all the excess of paint remaining upon the smooth surface of the wood is removed by scraping or otherwise. Upon the wood thus prepared a thin plate of copper, coated on both sides with wax, is placed and pressure is applied, "and the paint is thus forced from the pores and veins of the wood and adheres to the wax upon the copper plate." The plate is then removed from the wood, and all the coloured wax and that underneath is scratched off with a sharp pointed instrument, "so as to expose the plate beneath those parts." The plate is next placed in "an acid, which enters all the parts from which the wax has been removed and bites through them;" the remainder of the wax is washed from the plate and "a type or plate similar to an ordinary stencil plate, in which the veins and pores of the wood are exactly reproduced" is obtained. The plate thus obtained is sufficiently supple to be bent to the shape of mouldings. To print upon paper, cloth, &c., the material and the plate are passed between two rollers, the lower of which is supplied with colour contained in a trough, "in which it partly revolves, while the upper roller produces the required pressure." In imitating veins and knots of wood of the fir species, a white lead pencil is passed over the veins and knots of a thin fir plank, an india-rubber band is pressed over it, those parts of the india-rubber which do not bear the impression are then

incrusted or coated with some suitable material. This india-rubber belt is used for printing paper, fabrics, leather, &c. by passing round rollers along with the materials.

[Printed, 8d. Drawing.]

A.D. 1863, April 8.—No. 886.

GRAY, THOMAS.—“Improvements in preparing and bleaching “jute and other vegetable fibres for spinning and other purposes.”

First, “the omission of boiling the material in alkali before bleaching it.”

Second, “the mixture of soda ash, or other alkali with the bleaching liquor before the material is immersed in it; the material is thus rendered considerably stronger than that bleached by the ordinary process, and acquires a permanent snow-white colour.”

The jute in any quantity is placed in cold water “for about an hour or a little longer.” The bleaching liquor is “made from ordinary bleaching powder and cold water in the following proportions,” namely, to one pound of the material “using six ounces of bleaching powder in one gallon of water. A proportionate quantity of the liquor (according to the bulk of the material) is taken, and a solution of soda ash, or other alkali and hot water, is added to it and mixed together. The material about to be bleached is placed in this liquor for about an hour or a little longer. In order to “heighten the whiteness of the material,” it is replaced in a fresh bleaching liquor for about thirty minutes, and afterwards washed in cold water and hung up to dry.

[Printed, 4d. No Drawings.]

A.D. 1863, April 9.—No. 893.

COOKE, DAVID JAMES.—(*Provisional protection only.*)—“Improved compounds or compositions for sizing, stiffening, and coloring yarns and textile fabrics.”

For sizing and colouring worsted, braid, and fine cotton yarns, mix “about 20 lbs. of farina or potato flour, 20 lbs. of “sago flour, 15 lbs. of rice flour, and 6 lbs. of glue, with “sufficient water to make it of a suitable consistency,” and add to it “any suitable coloring matter to give the materials “the desired tint or color; the said mixture will be

"sufficient for about 112 lbs. of worsted braid." "Gelatine size for stiffening grey, white, or colored goods made of cotton, linen or other fibrous materials, whether in the state of yarn or woven fabrics," is made by "mixing about 280 lbs. of rice flour, 280 lbs. of wheat flour, 112 lbs. of farina or potato flour, 56 lbs. of sago flour, and 16 lbs. of glue, with a sufficient quantity of water to make it workable, and add the necessary coloring matter."

[Printed, 4d. No Drawings.]

A.D. 1863, April 10.—No. 913.

RIPLEY, HENRY WILLIAM.—(*A communication from Stanislas Vigoureux.*)—"Improvements in machinery for preparing and printing wool and other fibres."

"Combining the gill machinery used in preparing or producing an even web or sliver of wool or other fibres with a printing machine, so that the sheet or web of fibres may at once pass from the preparing gill machinery into and be acted on by the roller printing machine, without requiring to be made into rolls, or be handled and conveyed between one machine and the other. The details of the printing machine and also of gill apparatus employed in combination" may be greatly varied, but the following "is that which is preferred." The wool or fibrous substance passes through two pressing rollers, then through the gill teeth and between two pressing rollers, and from thence to the printing rollers, beneath which is the colour trough with the colour supply roller, a doctor, or expressing roller, and scraper. The colour supply roller supplies colour to another roller covered with elastic porous material, such as is described in No. 1085, A.D. 1863, above which is an engraved printing roller, above which again "is the apron or endless cloth for conveying the printed web of fibres to a suitable drying apparatus or receiver."

[Printed, 8d. Drawing.]

A.D. 1863, April 15.—No. 945.

GRAY, THOMAS.—"Improvements in preparing and bleaching flax, hemp, and other vegetable fibres, by which a brilliant lustre is imparted to those substances and the fibres are separated."

By the ordinary method of bleaching these substances, "the separation of the fibres is either not effected at all or effected very imperfectly," &c., but by the following method the results are as stated above. "The flax, hemp, or other vegetable fibre, is laid or boiled in soda ash liquor or other alkali for three or four hours; the material is then rinsed and dipped in sulphuric acid water, and after being slightly drained is placed in bleaching liquor for about an hour, then rinsed and drained, and afterwards dipped or placed in weak acid water for a few minutes; it is then taken out and slightly drained so as to leave it still impregnated with the acid; it is then dipped or laid in soapsuds made from soap in which fat and oil form the chief ingredients." After being "rinsed in cold water it is hung up to dry, and is then fit for use." "By placing the material impregnated with acid in soap suds an effervescence is caused, during which the fibres are separated, and are kept so by the adherence to them of the fatty matter contained in the soapsuds."

[Printed, 4d. No Drawings.]

A.D. 1863, April 24.—No. 1021.

PASSAVANT, PHILIP. — (*A communication from Friedrich Beyer.*) — (*Provisional protection only.*) — "Improvements in the manufacture of blue colouring matter and also of violet colouring matter."

For blue, take 4 parts "of fuschine," 8 parts of aniline, and 2 parts of acetate of soda, and heat the mixture slowly to 160° Reaumur, keep it so for two hours, then raise the same to 200° Reaumur, and keep it so for two hours. When the proper shade is obtained, it is poured into four parts of alcohol, to which are added 12 parts of muriatic acid. When cool, a hard brownish black substance is obtained, which is ground and boiled for a quarter of an hour in water with 8 parts sulphuric acid. This mixture is filtered, and the blue matter obtained is boiled twice in 8 parts of muriatic acid for the purpose of destroying the red tint, and washed several times in warm water to remove any acid, when it is powdered and dried, and over the powder is poured 10 parts of alcohol, allowed to stand for a few hours until all red has disappeared.

then filter the mixture, pulverize and dry it; the powder is fit for use, and it is called "bleu de nuit."

To produce violet, 4 parts "of fuschine," 8 parts of aniline, and 1 part of acetate of soda are heated slowly together until the mixture reaches a temperature of 180° Reaumur, at which it is kept for an hour, but the time depends on the shade required. The mixture of a black violet colour is poured into a filter with 30 parts of alcohol and 3 parts of rape oil. "The mixture having been distilled and filtered, the fluid is ready for dyeing purposes," and is named "fluid violet liqueur."

"The various proportions given above have been found to produce the most favorable results," but they admit of variation.

[Printed, 4d. No Drawings.]

A.D. 1863, April 25.—No. 1036.

POIRRIER, ALCIDE, and CHAPPAT, CHARLES.—"Improvements in the manufacture of blue and violet coloring matters suitable for dyeing and printing."

These improvements are, taking "aniline reds known in commerce under the names of 'fuchsine,' 'roseine,' 'Magenta,' and other names, and chemically as being different salts of rosaniline," and treating them with naphthylamine, a substance which is derived from naphthalene as aniline is derived from benzene." The proportions most suitable are 100 parts of aniline red to 400 or 500 parts naphthylamine, "except when certain salts of rosaniline (such as the acetate) are taken." These are melted together in an oil bath, "say four or five hours, and sometimes more, at a temperature between 150 and 155 degrees centigrade," adding to the mixture from 20 to 30 parts benzoic acid, or, "better still of an alkaline or metallic acetate (from 50 to 100 parts), such as the acetate of alumina, lime, or soda." "When the matters in the retort appear of the shade desired, the purification of the coloring matter is proceeded with in the usual manner of purifying aniline dyes with diluted sulphuric acid, hydrochloric acid, &c., and is finished by washing in pure water."

[Printed, 4d. No Drawings.]

A.D. 1863, April 27.—No. 1057.

ROLLASON, ALEXANDER.—(*Provisional protection only*).—
“Improvements in dyeing and staining fabrics, parts of
“which improvements are also applicable for dyeing, staining,
“and ornamenting glass and other substances.”

These improvements are, “dyeing or staining fabrics or
“papers that have been rendered waterproof by being coated
“with pyroxyline, either alone or mixed with oils, gums,
“resins,” &c., “capable of combining or being mixed with
“volatile, ethereal, or spirituous liquids,” by means of “a
“methylic, alcoholic, or ethereal solution of the desired color
“to the surface to be operated upon.” “Aniline colors or
“colors obtained from coal tar are the colours” usually employed, but other colours soluble in the same menstruum “may
“be employed, provided the menstruum used will act on the
“waterproofing solution with which the fabric is coated.”
American leather, cloths, &c. are coloured “by the spirituous
“solutions of colour.”

[Printed, 4d. No Drawings.]

A.D. 1863, April 29.—No. 1085.

RIPLEY, HENRY WILLIAM.—(*A communication from Stanislas Vigoureux*).—“Improvements in apparatus for printing fibrous
“materials.”

The printed liquid is applied to a roller covered with a porous cloth, and applied in such manner as to prevent there being any excess of colour upon the surface of the roller or excess of colour upon the surface, is removed in order “that fibrous
“materials when they come in contact with the roller in the
“process of printing, may not by the simple contact have
“color transferred to them from the roller.” Thick woollen cloth is used to cover the roller, also india-rubber cloth has been used, and over it, thin woollen cloth; other elastic porous coverings may be employed. The colour is “applied by means
“of another roller partly immersed in the printing liquid,
“and revolving in contact with the covered roller; any excess
“of the printing liquid is expressed either by a third roller
“or otherwise from the soft and porous coating of the covered
“roller.” “The printing is effected by means of a printing

"roller or surface on which the desired device is raised or engraved. The printed surface is employed to press the fibrous material against the covered roller," and "the fibrous material now receives color from the roller." "In some cases two printing rollers are used and the printing liquid is applied to the raised surfaces of such rollers in the ordinary manner," but "in place of the rollers simply having a rotating motion they each have also an endway to-and-fro motion, by which the fibrous materials are rubbed between the raised printing surfaces, and are so rendered less liable than they otherwise would be to adhere to the printing surfaces, and the printing liquid is thereby more thoroughly pressed into the fibrous material."

[Printed, 4d. No Drawings.]

A.D. 1863, May 1.—No. 1097.

CLISSOLD, WILLIAM. — "Improved apparatus for fulling woollen cloths and washing and cleansing woven fabrics."

These improvements are, applying to machines for the above purpose "a certain mechanical means for imparting a temporary twist to the fabric under treatment immediately before it enters the fulling or pressing rolls, the object (when fulling cloth) being to prevent the permanent formation of creases in the cloth during the fulling operation." For this purpose employing "a revolving mouth piece or guide for guiding the endless band of cloth to the fulling rolls" and driving "it alternately in opposite directions, thereby putting a twist into the cloth, which twist remains in it while under the pressure of the fulling rolls, but disappears as the cloth drops into the pit of the fuller, the cloth in passing again towards the revolving mouth piece or guide opening so that the same creases are never repeated."

"The improved machine is also applicable for washing endless bands of woven fabrics or piece goods generally."

[Printed, 10d. Drawing.]

A.D. 1863, May 7.—No. 1148.

HOLLIDAY, THOMAS. — (*Provisional protection only.*)—"An improved blue colouring matter."

This colouring matter is obtained by "the combination of rosaniline with the benzoate of aniline or combination of

“ benzoic acid with aniline or its homologues or mixtures of them.” For this purpose mixing together “ benzoic acid with aniline or its homologues, or mixtures of them, in a suitable vessel,” and adding thereto “ the substance obtained from red aniline dye and called rosaniline;” then applying heat so as to obtain a state of slight ebullition which is maintained “ till the blue colour desired is fully developed.” “ One part of benzoic acid to three parts of aniline and one part of rosaniline answer well,” but other proportions may be used. “ The matter obtained may then be mixed with acetic acid, methylated spirit, wood spirit, or alcohol, and after filtration it will be ready for dyeing purposes;” or if desired in a dry or powdered state “ the matters obtained as above” are “ subjected to the action of an acid (as sulphuric or hydrochloric acid) and boiling water, adapted to remove the excess of aniline and benzoic acid.”

[Printed, &c. No Drawings.]

A.D. 1863, May 9.—No. 1166.

BRIERLEY, JOHN.—(*Provisional protection only.*)—“ Improvements in dyeing knickerbocker yarns and textile fabrics manufactured of or from such yarns.”

Knickerbocker yarns are composed of two or more classes of fibres or “ a combination of animal and vegetable fibres, such as wool, cotton, and silk, and these several fibres have different colours given to them,” and “ heretofore the dyeing has been effected on the wool and other fibres separately, and they have then been mixed together before being spun into yarn, but in consequence of the necessary use of oil in the processes of preparing and spinning wool, and such oil having afterwards to be removed by scouring or washing the said yarns or the fabrics made of such yarns, the brightness of the colours is thereby destroyed or impaired.” These improvements consist “ in having the fibres, or such of them as are intended to be dyed bright colours mixed, spun, and scoured or washed before dyeing them. The dyeing is then effected either upon the yarns before weaving, or upon the fabrics made of such yarns, by any of the well-known means and methods of dyeing mixed fibrous substances and fabrics.”

[Printed, &c. No Drawings.]

A.D. 1863, May 9.—No. 1173.

WILLIAMS, CHARLES HANSON GREVILLE.—“Improvements
“in the manufacture of coloring matters.”

These are “The converting rosaniline or salts of rosaniline
“into a blue colour, by treating the same with oleate of
“aniline,” as follows:—“One part by weight of rosaniline
“or one of its salts, such as the acetate, hydrochlorate, or
“sulphate,” is mixed with “eight parts of oleate of aniline
“or with four parts of oleic acid, and four parts of aniline.”
The mixture is then heated to “between 360° and 400° F.,
“until the whole is converted into a deep blue mass, soluble
“in spirit of wine.” “Any oleic acid and aniline remaining
“in the mixture may be removed by first boiling with dilute
“sulphuric acid, and then with coal naphtha or photogen.”
“The impurities are thus removed, and the coloring matter
“remains behind in the form of a coppery or bronze-like
“mass. For the purpose of dyeing, it is merely necessary
“to dissolve this bronze-like matter in spirit of wine, and add
“it to the bath.” Under the word aniline is included
“toluidine, and other substances very closely resembling
“aniline, and which are known as the homologues thereof.”

[Printed, 4d. No Drawings.]

A.D. 1863, May 11.—No. 1178.

BURGESS, ROBERT.—“Improvements in machinery or appa-
“ratus for marking, etching, or engraving cylindrical and
“other surfaces.”

This invention relates to pentagraph machines, and consists
of “arrangements for supporting the floating table which
“carries the roller or surface, in order that the table may be
“moved longitudinally and transversely with ease and cer-
“tainty. The plate or surface of the table rests, near each
“end, upon two discs or wheels supported on a triangular
“shaft placed transversely across the machine and having
“bearings, so that it can revolve. The two shafts are parallel
“with each other, and their surfaces form beds on which run
“pulleys or guide rollers carrying as many bars as there are
“surfaces, which bars are connected to a triangular box or
“frame fixed to each disc or wheel outside the triangular
“shaft. Thus the discs and bars ride, by means of the pulleys

“ or guide rollers, on the surfaces of the triangular shafts
“ and allow the transverse movements of the table, and the
“ revolution of the shafts and discs its longitudinal movement.
“ When a roller or cylinder is to be marked, etched, or
“ engraved, it is placd upon two plates, one at each end of
“ the table, which, when moved one way, takes the roller with
“ it, but when moved the other way gives a revolving motion
“ to the roller equal to the movement of the table, the move-
“ ments of which are obtained by the ordinary pentagraphic
“ arrangement.”

[Printed, 1s. 4d. Drawings.]

A.D. 1863, May 13.—No. 1201.

PARKINSON, THOMAS, and TAYLOR, FRANCIS.—“ Improve-
“ ments in machinery for weaving, sizing, dressing and
“ dyeing.”

“ The application of a revolving screw for agitating liquids
“ employed in sizing, dressing, and dyeing.” A vessel con-
tains the sizeing, dressing, or dyeing materials to be agitated,
supported in which is a screw attached to a vertical shaft;
this screw is turned round by steam or other power applied to
the shaft. A clutch box is applied to the shaft, to disconnect
the agitator when required. To the bush in which the shaft
revolves is fixed an arm supporting an upright rod or scraper
for scraping the interior of the vessel and agitating the size
or other material near the circumference. The shaft and the
bush are turned round in contrary directions by two pair of
bevil wheels. The other parts of the improvements relate to
looms for weaving.

[Printed, 8d. Drawing.]

A.D. 1863, May 13.—No. 1208.

FARMER, JAMES. — “ Improvements in calendering, em-
“ bossing, and other such machines used for finishing woven
“ fabrics, part of which improvements is also applicable to
“ dyeing machines.”

First, the adaptation of rollers as side bearings for the axes
of calendering, embossing, and other such machines used for
finishing woven fabrics.

Second, “ the application of rollers bearing upon the top
“ and bottom rollers of such machines.”

Third, "the application of a second gland and stuffing box "when heat is required in a cylinder" as applied to "callendering, embossing, and other such machines used for finishing woven fabrics."

Fourth, "the application of a second gland and stuffing box "to steam drying cylinders."

In these two last cases the axis of the cylinder is situated in a cross piece, within which is a stuffing box and gland. This gland is in communication with a pipe through which steam is allowed to flow, and from thence through the axis into the cylinder. In front of the gland is a second stuffing box and gland, "and this gland being tightened thrusts forward the other, and the steam passages are thus securely packed on either side."

[Printed, 10d. Drawing.]

A.D. 1863, May 22.—No. 1291.

HOFMANN, AUGUSTUS WILLIAM.—"Improvements in preparing coloring matters for dyeing and printing."

"The production of new coloring substances by the action of "the iodides and bromides of alcohol radicals on rosaniline." The following is the manner preferred to proceed:—"Take "1 part by weight, of rosaniline, 2 parts, by weight, of iodide "of ethyl, and about 2 parts of strong methylated spirit," and "heat these substances together in a suitable close vessel, either "of glass or metal, capable of sustaining the pressure generated to a temperature, by preference, of 212° F. for 3 or "4 hours, or until the whole of the rosaniline is converted "into new coloring substance;" "allow it to cool and dissolve "the syrupy mass in methylated spirit or alcohol, which "alcoholic solution may be used for dyeing and printing;" or, "in order to recover the iodine," "take the product either "before or after dissolving it in spirit, and boil it with an "alkali," the base is precipitated, and iodide of potassium is in solution. The base is washed and dissolved together with an acid as hydrochloric acid in alcohol, or in place of hydrochloric acid and alcohol, using acetic acid and water; these solutions are employed for dyeing or printing. This colour "dyes silk and wool of a beautiful violet, blue violet, and "red violet tint. In place of the iodide of ethyl, the iodides "and bromides of methyl, amyl, propyl, and capryl, and

"their bromides" may be employed, "but not so conveniently, as they are more expensive."

[Printed, 4d. No Drawings.]

A.D. 1863, May 29.—No. 1354.

GREEN, WILLIAM.—"Improvements in the means or method of producing black coloring matters or pigments."

First, "the production of black pigments by the precipitation, of the coloring matter of myrabolanes, galls, logwood, tannin, and such other materials as are used in the manufacture of black writing inks, and in dyeing black in conjunction with the mordants that are used for such purpose, and the application of such pigments when dried to the purposes for which smoke vegetable and such blacks are capable of being used, either alone or in admixture with the blacks of commerce." The mordants named are sulphate of copper, which, with logwood, gives a blue black, sulphate, and other salts of iron, an alkali or alkaline carbonate, or alkaline earth may be added, so as to cause the more perfect precipitation of the colour.

Second, "the precipitation of the said black pigments upon or in conjunction with a basis," for "the production of soft blacks, and in the use of the base when simply stained with these coloring matters as a black pigment."

Third, "the use of the before-mentioned pigments as water colors," or dried "as crayons or solid ink."

[Printed, 4d. No Drawings.]

A.D. 1863, June 1.—No. 1365.

CLARK, WILLIAM.—(*A communication from Joseph Saroglia.*)—"Improvements in apparatus for printing fabrics, papers, and other surfaces in colors."

The fabric to be printed is strained on a stationary or fixed table. Above this fixed table are as many printing plates as there are different colours to form the design or pattern to be printed. The top surfaces of these printing plates are fitted with a series of male screws, which turn in female screws, whose outer sides form spindles or shafts for as many bevil wheels as there are printing plates. The shafts of these bevil wheels pass through an iron frame, which carries at each end

two grooved rollers, fitting into the printing plates, and by means of chains passed round these grooved rollers, and round pulleys fitted at the top of the apparatus, the frame and printing plates may be traversed transversely backwards and forwards as required. Into the bevil wheels before mentioned, gear bevil pinions keyed upon a long horizontal shaft, fitted with crank handles at each end, so that by turning these crank handles in one direction, the printing plates (when traversed so as to come over the pads which are impregnated with the colours to be printed) may be lowered to receive the colour; by turning the crank handles in the opposite direction, the plates will be raised, the frame and carriage again traversed over the fabric to be printed, and again depressed in order to print the design required.

[Printed, 8d. Drawing.]

A.D. 1863, June 4.—No. 1396.

POLLACK, HEINRICH.—(*Provisional protection only*).—"An improvement in the manufacture of scarlet, brown, and orange colors."

First, making the scarlet, which is named Ilarin or polixan," as follows:—"500 parts Teneriffe cochineal, 175 parts stannum muriaticum, 98 parts crystallized soda, 500 parts acetic acid, 100 parts oxalic acid, and 13 parts gum tragacanth. These admixtures pass through the various stages of boiling, drying, and grinding, under certain conditions. Eight days' manipulation is then required, when the mixture becomes a stiff liquid," and is ready for use, and "without requiring the cloth or stuffs to be prepared."

Second, making "the brown and orange by mixing with the same ingredients as above, and the like proportions, a portion of indigo carmine, a beautiful brown is produced; and by mixing Persia berries or Zante fustic, a yellow to orange color can be produced." "The proportions, however, of the carmine or fustic to be mixed depends entirely upon the lighter or darker shade of brown dye required in the first case, and of the orange to yellow dye in the second case."

[Printed, 4d. No Drawings.]

A.D. 1863, June 5.—No. 1403.

GRAY, THOMAS.—“Improvements in treating flax, hemp, and other vegetable fibrous substances in order to bleach and separate the fibres.”

The fibrous substances are first washed in water, and then soaked in “a weak bleaching liquor composed, in preference, of 4 to 6 ozs. of chloride of lime to 1 gallon of water, from 6 to 12 hours, according to the substance” operated upon, harsh fibres requiring longer soaking than more delicate ones. After this, they are again washed, and are then boiled in a solution of soda ash, other suitable alkali, for from 2 to 4 hours, employing, by preference, about 1 oz. of ash to a gallon of water. If the fibres are very stout and harsh, they may before being boiled in the alkaline solution be first laid in a weak solution of sulphuric acid,” ($\frac{1}{2}$ oz. to a gallon of water) and be drained before being boiled. After being boiled in the alkaline solution they are again washed and placed in bleaching liquor,” composed of 4 to 6 oz. chloride of lime, 1 oz. soda ash, and 1 gallon water,” from 4 to 6 hours, but the operator will “be able to see when the bleaching operation has been carried sufficiently far. The fibres are then washed.” “If they are to be employed for the production of yarns, they are to be opened out and prepared for spinning by ordinary mechanism.”

[Printed, 4d. No Drawings.]

A.D. 1863, June 11.—No. 1458.

SCHLUMBERGER, JULES ALBERT.—(*Provisional protection only*).—“Improvements in the preparation of aniline dyes or colouring matters for dyeing, staining, or printing textile substances.”

Precipitating aniline dyes, as red, blue, and violet and others by means of certain salts.” “By this means is obtained a double compound, consisting of coloring matter and acid, which is capable of being fixed on cotton without any of the metallic mordants generally used for the purpose.” This is effected “by a solution of borate of soda, silicate of soda, or phosphate of soda, or a solution of the acids of the above-mentioned salts or the same acids com-

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"bined with other alkaline or earthy bases, and especially alkaline bases." "The precipitate thus obtained is dissolved in acetic acid, alcohol, or other suitable solvents, and may then be used for dyeing or printing in the usual manner."

[Printed, 4d. No Drawings.]

A.D. 1863, June 16.—No. 1505.

LIGHTFOOT, JOHN.—"Improvements in fixing mordants in the processes of dyeing and printing textile fabrics or yarns."

"The use of 'ammoniacal gas,' or the 'volatile alkaline salts' of ammonia," for the purpose of converting the mordant or mordants into sub-salts subsequent to the printing or padding processes, in order to make them less soluble in the "dyeing," "dyeing," and soaping operations, thereby effecting a considerable economization of time in 'ageing,' by the old process or processes, as well as a saving of the mordant and dyeing material. The goods after printing, padding, staining, or steeping, are dried and passed "through a vessel or compartment containing ammoniacal gas or vapour, dry, moist, or mixed with steam or air hot or cold," but in preference "the ammoniacal gas is heated to about 110° F., and especially for heavy work," and in preference the ammoniacal gas is mixed "with a little steam or vapour from water. The said vessel or compartment must be fitted with rollers, rails, or other suitable apparatus for the purpose of conveying the goods or materials through it, which may be confined in the said vessel or compartment a few minutes, varying according to the quantity of mordant used, then passing them through water or a mixture of dung and water," &c., then washing "the goods well previous to dyeing," &c.

[Printed, 4d. No Drawings.]

A.D. 1863, July 9.—No. 1713.

WILSON, WILLIAM VIRGO.—(*Provisional protection only.*)—"Improvements in the manufacture of red colouring matter."

To a mixture of aniline with its homologue toluidine add nitric acid in small proportion, about five per cent. of the latter or its equivalent in other nitrates. The temperature of

the mixture should then be raised; 250° Fahr. has been found suitable. The temperature is maintained, while from time to time binoxide of manganese is added "until the operation is finished. The mass will then assume when cold a hard bronzed appearance, from which the red colouring matter may be extracted by the usual known methods. Other acids, such as iodic, chloric, perchloric, arsenic, manganic, permanganic may be used in place of the nitric acid in the small proportion above mentioned. And in the place of the binoxide of manganese other metallic peroxides."

[Printed, 4d. No Drawings.]

A.D. 1863, July 13.—No. 1748.

LAING, JAMES.—(*A communication from Nicholas Rave, aîné*)
—"Improvements in dyeing and printing."

"Using the fatty acids, namely, oleic, stearic, margaric, linoleic, benic, margaritic, ricinic, palmitic, laurostearic, or any other analogous fixed fatty acid" either with or without the admixture of glycerine combined with ammonia, as mordants or fixing agents in dyeing and printing threads and textile fabrics. "Oils have long been used in dyeing and printing in various ways," but the claim is for "the use of such fatty acids in combination with ammonia, as a destructive or adjunctive mordant or fixing agent in dyeing and printing threads and textile fabrics." Also "linseed or other drying oils in a boiled state have been used to fasten pigment colours," but the claim is for "the use of the acids of linseed oil, or of any other drying fatty oil above named, combined with ammonia, as a compound to fasten pigment colours or threads and textile fabrics," as follows:—The acid from linseed oil is exposed to heat for a long period until when cold it has the consistence of butter or even of wax, when it is combined with ammonia by stirring and working, and thus is used as a substitute for albumin or lactarine. The pigment required to be fixed is mixed intimately with the ammonia compound, and made of the proper consistency for printing by ammonia or mucilage; the cloth is printed and left exposed to the air for some days until the colour is fixed, which is "hastened by hanging in a warm room and by steaming in the usual way."

[Printed, 4d. No Drawings.]

A.D. 1863, July 15.—No. 1773.

HENRY, MICHAEL.—(*A communication from the Société Trotry Latouche, Frères.*)—"Improvements in figuring, ornamenting, and coloring fulled and felted fabrics and articles."

Subjecting the fabric or article to a process consisting of the following stages:—"In the first stage the article or fabric is dressed, teased, or rowed by a gig mill or other teasing or rowing machine, and it is then sheared or clipped." These operations are repeated alternately "as often as required till the desired nap or pile is raised." "The article or fabric is then, in the second stage, embossed, stamped, or printed with a device or design by means of engraved surfaces (with or without colour), to which the nap, pile, velvety, or flock side of the fabric or article is applied," "a cushion or pad being placed on the reverse and pressure applied, preferably by a hydraulic press with its lower plate heated by steam, or instead of plates, engraved rollers may be used." In the case of hats and other hollow or shaped articles "an engraved surface, mould, or shape is employed, engraved on the inner side, and of a form corresponding to that of the article to be figured or ornamented." Into this mould the hat, &c. is inserted, and within that is placed an elastic pad or block, to which pressure is applied, whereby the device or design is produced. After the second stage the fabric or article is subjected to the third stage, in which the relief of the device or design is rubbed with rollers or other appliances formed of or faced with pumicestone, emery, glass powder paper, scouring paper, or other wearing or rubbing surface, which partially removes or wears away the relief. "After beating the fabric or article to expel dust, it is subjected to the fourth stage, that is to say, to the action of steam, whereupon the relief will vanish and the reverse of the design will stand out or present itself. Fabrics and articles so treated may be passed through hot or cold water without losing shape or pattern." "When the pattern or design is in two or more colours the article or fabric is printed in as many colours as required before the first stage, and is then washed and subjected to the four stages above described." "Shaded grounds may be obtained by applying to the drest or prepared surface of the article or fabric, after the first stage, a thin printing dye without figuring, and after fixing

“ this the fabric or article is subjected to the three remaining stages, but should be washed before steaming. To ornament dye, or print articles or fabrics in colours they are treated with the four stages described, except that the printing or stamping plates, rollers, moulds, or surfaces are not engraved, but they may be varnished to retain the colour.”

[Printed, 4d. No Drawings.]

A.D. 1863, July 30.—No. 1883.

INSKEEP, GEORGE.—“ An improved mill for grinding bones, grain, logwood, and such like substances.”

This machine consists of a framework with “suitable bearings for the axis of the grinding cylinder. The same shaft carries the fly wheel and receives motion from steam and other motive power acting on a pulley or drum fixed on the axis.” The cylinder is provided with a number of cutters, removable at pleasure, which may be serrated or otherwise and placed in a curved or oblique direction, so as to force the materials towards the middle of the cylinder. The substance to be ground is first placed in a hopper fixed over the cylinder and forcing ram, “so that upon the withdrawal of the latter the material falls upon a bed plate which is underneath the forcing ram,” which forces the material to be ground against the revolving cylinder. This ram is “fitted with guides and actuated by a weighted lever working through a cross shaft and lever acting upon a slotted crosshead” attached to the forcing ram, the ram being brought back, so as to admit the necessary charge, by a crank with a loose roller working by a series of wheels or other means from the main shaft. The face of the ram is furnished with teeth, which are removable at pleasure. The bed plate above named is movable, and is acted upon by another weighted lever. The plate is regulated by a set screw, so as not to press, “too closely against the cylinder by the lever.” “This bed plate is also provided with a cutter of a suitable shape to correspond with the cutters on the cylinder, the object for this being for the material, after passing through the cutters of the forcing ram, to be again ground by the cutters of the bed plate. and so reduce the material to as fine a powder as may be required.” “The cutter on the bed plate is removable, so

" that when the mill is employed to grind corn a cutter of the proper size may be introduced."

[Printed, *8d.* Drawing.]

A.D. 1863, July 30.—No. 1885.

BOEDDINGHAUS, JULIUS.—(*Provisional protection only.*)—

" Improvements in means or apparatus for the production of parti-colored yarns."

The fibres in the form of yarns or otherwise to be printed, are caused to pass between a pair of printing cylinders, the surfaces of which are prepared to receive and print the desired colors in the form and order desired. The respective colors are supplied to the surfaces of these printing cylinders at the times or places desired by other print rollers, which are supplied with color from print troughs. These color rollers are supported on weighted levers or by other suitable means, have a tendency to be borne towards the printing cylinders to impart color to them, but are kept from the printing surfaces of such cylinders except when required, by moveable stands or surfaces adapted to be applied in relation to the surfaces of the respective color rollers, so as only to admit those for the time required to give off their color to the printing cylinders." The order of colouring and the number of the colour rollers may be varied.

[Printed, *4d.* No Drawings.]

A.D. 1863, July 31.—No. 1899.

ARROTT, ALEXANDER ROBERTSON.—" Improvements in bleaching certain vegetable fibres used for textile or other purposes, whether in the raw state or manufactured."

Using for bleaching purposes "a solution containing a bleaching chloride and an alkali, the bleaching being completed in this liquid, and the use of free chlorine altogether avoided." It is stated that fibres thus bleached "suffer less loss in weight and less loss in strength of fibre." A solution is prepared "containing in addition to the alkali in combination with chlorine a certain amount of caustic alkali," and preferring "for bleaching flax, hemp, or cotton, that this alkali should be at least in proportion to the amount of

“chlorine in the solution as 5 to 100, but in the bleaching of jute and similar materials” the alkali may be “increased with advantage even to the extent of 25 to 100.” The temperature preferred is 80° to 100° Fahr., and the liquid preferred to be used “at this temperature contains 200 or 300 grains of chlorine per gallon.” “There are many methods of preparing the bleaching liquid; one of the most convenient is by passing chlorine into a solution of caustic alkali;” or bleaching powder may be decomposed by an alkaline carbonate in excess, the free lime in the bleaching powder causticising the excess of alkaline carbonate, or lime must be added; or an alkaline sulphate is used in place of the carbonate, and carbonate only added in quantity sufficient to produce the necessary amount of alkali. The liquor being prepared of the proper strength, the goods are placed in it, and if the quantity of liquid be sufficient, “the process is completed in one operation, but, as after some time the action is slow,” it is preferred to draw off the partially exhausted liquid and renew it by fresh until the goods have become of the desired degree of whiteness, when they are thoroughly washed and dried.

[Printed, 4d. No Drawings.]

A.D. 1863, August 1.—No. 1902.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Theophile Grison.*)—“Improvements in dyeing mixed animal and vegetable fibres, whether in a raw or manufactured state.”

“Dyeing mixed animal and vegetable fibres, whether in a raw or manufactured state, or at one operation,” as follows:—For dyeing cloth there are two modes of operating; the first consists in mordanting and dyeing in a single bath, and the second in two distinct baths. The first is conducted as follows:—A bath is made with “1 to 4½ lbs. of sulphate of iron and ½ to 2½ lbs. sulphate of copper;” other salts may be used, and place “a piece of mixed cloth weighing from 20 to 25 lbs. of wool,” and work it therein and boil for about an hour, then take the cloth out, and neutralize the acid in the bath by alkali, and add schumac, fustic, and logwood, or their extracts, according to the shade required; heat the bath from

100° to 120° Fahr., and work the cloth 15 to 26 minutes. The addition of a small quantity of the sulphates of iron and copper heighten the colour. In operating by the second method, a bath is prepared "with one of the salts above named, or with acetate, nitrate, pyrolignite or chloride of iron, alone or mixed with soluble salts of copper, chromina, manganese, or lead; this bath may vary from 1° to 8° Beaumé, according to the shade to be obtained." The stuffs are impregnated with this liquor; they are taken out and left for 6 to 12 hours. If they had been heated in the bath they are rinsed with water before dyeing. The dyeing bath is prepared as in the first instance, and when at 100° to 120° Fahr., "place the stuffs therein for 15 or 20 minutes, then raise the heat to the boiling point, boil an hour, take out the stuffs, add to the bath a small quantity of the several salts mentioned, and again boil an hour." For other colours, black alumina and tin, or both mixed in varying proportions, may be employed as mordants. Mixed animal and vegetable fibres are dyed as in the first mode.

[Printed, 4d. No Drawings.]

A.D. 1863, August 6.—No. 1936.

LOWE, CHARLES.—(*Provisional protection only.*)—"Improvements in dyeing and printing."

Applying "the soluble alkaline phosphates, borates, or arseniates of potash, soda, or ammonia, for the purpose of rendering more soluble in the dye bath" the colouring matters, "aurine and rosolic acid," and "thus facilitating the dyeing and printing processes in which they are used." Phosphate of soda is preferred, 2½ lbs. to a gallon of the colouring matter; different goods however require different treatment. The different goods are worked in the bath "until the desired shade is obtained, after which they are washed off. The reddish orange shade obtained as above may be converted into a yellow orange by the addition of any acid or acid salt to the wash-off water."

[Printed, 4d. No Drawings.]

A.D. 1863, August 7.—No. 1952.

SLATER, JOHN WILLIAM.—"Improvements in the production of yellow and orange coloring matters."

"Treating hides and leather, and the refuse chippings of the same, and other similar animal substances, for the "production" of the foregoing "coloring matters" as follows:—To every 3 or 4 lbs. of nitric acid of about 62° Twaddell, 1 lb. of the clippings are added, so that the temperature does not rise. If leather be "used it must not have "been dyed or stained with any preparation of iron, as such "leather would produce a buff dye instead of a pure yellow." When "the action of the nitric acid on the animal substances "has ceased the products are allowed to cool, and any fatty "or other bodies that may rise to the top are to be skimmed "off and removed." The liquid is filtered, concentrated carefully, cooling from time so as to allow the oxalic acid to crystallize and be removed. "The thick mother liquor "will contain the coloring matters" which may be at once diluted and used for silk, wool, &c. If the color is desired "in a state of greater purity the mother liquor is evaporated "very cautiously to dryness to remove nitric acid, is redissolved in water, and to the solution powdered chalk is "added until no further oxalic acid precipitates;" the oxalate of lime is removed and the clear yellow solution is the colour.

[Printed, 4d. No Drawings.]

A.D. 1863, August 10.—No. 1972.

NEWTON, ALFRED VINCENT.—(*A communication from Meister Lucius, and Company.*)—(*Provisional protection only.*)—"An improved manufacture of blue and of violet coloring matter."

Rosaniline is obtained from aniline red by treating it with caustic soda, and after being well washed "with pure water "and dried, is heated to from 334° to 388° F., or thereabouts, "with equal parts of a combination of toluidine and benzoic acid," obtained "by dissolving 4 parts of crystallized toluidine with 3 parts benzoic acid in alcohol" and evaporating the alcohol. In proportion to the time given to the reaction "different tints are obtained. The viscous matter thus produced is purified (by means of mineral acids more or less "diluted) from the residue of toluidine with benzoic acid and "the decomposed matters which have resulted." "Nearly "the same result as that obtained by this combination of

“ benzoic acid and toluidine may be obtained by using other salts of toluidine.”

[Printed, 4d. No Drawings.]

A.D. 1863, August 12.—No. 1986.

GRAHAM, GEORGE.—“Improvements relating to baths or boilers used in dyeing.”

Arranging or constructing of the heating details of baths or boilers substantially as follows:—Hitherto each bath was heated by a special furnace, and it is now proposed to have to each bath a “steam jacket or casing supplied with steam from a separate boiler, and with this arrangement a single furnace and boiler may be made to heat a number of dyeing baths, the action of each of the latter being easily regulated by means of valves or stop-cocks on the branch steam-pipes supplying the respective steam casings.” The goods under treatment “are worked through the dyeing liquid in the bath either continuously or with intervals, being made to circulate out and in again by means of a reel or roller” mounted in bearings above the bath and driven in any convenient way, as is well understood.” A kind of compartment is formed in the bath by means of two boards, the lower one being inclined and leaving a narrow passage at the bottom. The goods entering this compartment “become more or less accumulated in it, and are gradually withdrawn from the bottom of it by the action of the reel,” and pass more quickly through the other compartment. The steam jacket extends further up the side of the bath where the goods leave the bath than where the goods enter, “in order that the goods may not experience the greatest intensity of the heat just on entering the liquid and whilst passing more slowly through the first compartment.” The pipe supplying steam to the jacket is for the same reason placed on the side requiring most heat. The steam from the jacket or casing does not enter the bath or mix with the dyeing liquid.

[Printed, 10d. Drawing.]

A.D. 1863, August 13.—No. 2003.

HENDERSON, JOHN.—(*Provisional protection only.*)—“Improvements in preparing yarns for printing.”

"Yarns to be printed or parti-colored are subjected to a bleaching process in which sulphur is generally employed, and this sulphur if allowed to remain in the yarn has an injurious effect upon the colors applied in the subsequent printing processes." "At present, in order to remedy this evil, such yarns are subjected to repeated steeping and washing in water, but such steeping and washing is found inefficient;" and these "improvements relate to the employment of a solution of ammonia as the washing medium," in which "solution the sulphur is removed." "A proportion of one part of double ammonia to ten parts of water answers well," but the proportions may vary.

[Printed, 4d. No Drawings.]

A.D. 1863, August 20.—No. 2069.

FLEMING, JAMES.—"Improvements in preserving colours of dyed fabrics."

These improvements are, "the application and adaptation after the goods or fabrics are starched of a solution of chloride of lime or 'bleaching' powder of a 'chlorimeter' strength, sufficient to remove all superfluous starch, but at the same time preserving the necessary amount of starch in the body or substance, as well as preserving the colors possessed of all their original beauty in dyed goods or fabrics."

According to one system, the goods after starching are "immersed in a bath, tub, or other vessel" of the solution of chloride of lime, and "according to a second system, the goods are passed through a double mangle, the first box, vessel, or chamber containing starch, and the second having in it chlorine, the action of the chloride of lime or bleaching powder, as well as the operation of mangling, being performed in the same machine and at the same time."

[Printed, 4d. No Drawings.]

A.D. 1863, August 29.—No. 2135.

TINGEY, WILLIAM.—(*Provisional protection only.*)—"Improvements in printing carpets, piled fabrics, druggets, and other similar articles."

These improvements are, "printing the said fabrics or articles when they are in a dry state, and steaming them

"when they are in a wet state, instead of printing them wet and steaming them dry."

[Printed, 4d. No Drawings.]

A.D. 1863, September 8.—No. 2207.

BURCH, JOSEPH.—"Improvements in printing on certain and other terry and velvet pile carpets felted cloths and other fabrics and materials, and in the processes and apparatus connected therewith."

First, "the mode of mordanting the worsted or wool intended to form the face of carpet fabrics before it is manufactured or felted in cloth, provided such fabrics be afterwards printed in a wet or damp state, and the colors fixed thereon by the steaming process while such fabrics are still wet and before the colors printed thereon are dried." The worsted in the unspun state is submerged "in a bath of a solution of muriate of tin crystals, as from 4° to 6° Twaddell, where it remains for two hours; it is then taken out and put through a weak sour bath made of sulphuric acid and water reduced from ½° to 1° Twaddell, and immediately afterwards through a weak chemic bath also at from ½° to 1° Twaddell; it is then well washed and dried" for the purpose of weaving or felting.

Second, damping "velvet pile and terry carpets and other fabrics previous to printing them by rolling a wetted piece of cotton fabric or other material along with such carpets or fabrics upon a beam or roller."

Third, "the apparatus and the mode of padding the face of the carpet and other fabrics with a solution of starch paste, or such like matter previous to printing such fabrics in a damp or wet state, whenever such fabrics are afterwards subjected to the steaming process while they and the colors printed thereon are still wet and undried." Using weighted rollers upon the surface of a revolving drum or endless cloth, on which the liquid solution is evenly spread upon the faces of the fabrics previously to printing them.

Fourth, "the mode of partially or wholly drying the backs of such carpet fabrics as have been printed in the damp state, and which are to be steamed before the face of such fabrics and the colors thereon are dry," by "passing them

“ over the heated surface of a steam cylinder or other drying apparatus.”

Fifth, “ the apparatus and mode of steaming printed coloring matter upon the faces of carpets and other fabrics.”—The apparatus is “ a lofty narrow chamber internally fitted with a number of vertical partitions which extend from the bottom to within a short distance of the top ;” the fabric is made to pass through these compartments by means of a series of rollers. “ The steam is let into the chamber at the bottom of each of the centre compartments, and finds its way out at or near the openings where the fabric enters or leaves the chamber, or through an opening made for the purpose.” Also sometimes using, “ in connection with the other parts of this invention, the ordinary hanging frame and steam box now in general use for fixing topical colours.”

Sixth, “ the apparatus and mode of washing carpets and such like fabrics.” This consists of a long shallow trough, along which, sometimes alone and sometimes upon a thick endless foundation cloth, the printed fabric is drawn between a number of pairs of small rollers and under other small rollers and revolving brushes, while a constant stream of pure water runs through the trough, with constant falls of water which play upon the face of the printed fabric, after which, on the fabric being drained, it is received between a pair of squeezing rollers, round each of which is an endless cloth.

Seventh, “ the apparatus and the mode of finishing the backs of such carpets and other printed fabrics which have been printed while in a wet state, and steamed while the colors are undried.” The apparatus is similar to that described under the third part of this invention, except that instead of the face of the carpet fabric being pressed upon the endless cloth by the pressure roller the back of the carpet is pressed upon the endless cloth and receives the stiffening matter therefrom.

Eighth, making the fourth part of this invention, when necessary, and the fifth and sixth parts, and sometimes the seventh part, a continuous operation, to be finished by the operation of finally drying such and other fabrics.

Ninth, “ printing on velvet, pile, and terry-faced fabrics, when the terry and velvet pile forming the face of such

"fabrics has been raised across the fabric by the use of wires made of brass, tin, or other metals, excepting iron or steel;" and "the mode of manufacturing plain carpet fabrics that are intended for printing, and of printing such fabrics whenever they are made with three picks of weft to every terry, and bound either with single or double binder warps."

[Printed, 1s. 10d. Drawings.]

A.D. 1863, September 29.—No. 2388.

HAIGH, HENRY, and HEATON, RICHARD.—"Improvements in dyeing cotton or other vegetable fibrous substances."

"The use of a solution of lime or other alkaline solutions instead of bichrome or bichromate of potash in the process of dyeing cotton or other vegetable fibrous substances catechu brown." "After the fibrous substances have been subjected to the action of a strong decoction of catechu, whether in a hot or cold state," in preference they are placed "in a bath of lime water or a solution of lime water," but other alkaline solutions will answer the purpose. "If the shade is required to be darker or sadder" they are subjected "to a bath or decoction of logwood, peachwood, fustic, or other coloring matters or combinations thereof, according to the particular shade of brown required to be given to the said substances."

[Printed, 4d. No Drawings.]

A.D. 1863, October 2.—No. 2416.

TONGUE, JOHN GARRETT.—(*A communication from Antonio Bozzi.*)—(*Provisional protection only.*)—"An improved compound reactive agent and universal mordant to be employed in the processes of dyeing and printing."

This compound "is composed of the following ingredients or their chemical equivalents, silicate of lime, oxide of iron, sulphate of alumina, urine, potash, saltpetre, and water in suitable proportions, the sulphate of alumina being added to the other ingredients after they have been boiled together in water for about an hour," stirring the mixture which is removed from the fire. "In about 24 hours the clear liquid compound is run off and is ready for use, and may generally be employed in the cold state." The proportions of the

compound "reactive agent" which is employed for bringing colours, varies from 10 to 50 per cent. When it is employed for fibrous materials, fabrics or tissues, "a small quantity of lemon juice and white sugar is added to the previously prepared compound liquid or reactive agent."

[Printed, 4d. No Drawings.]

A.D. 1863, October 10.—No. 2489.

PROUDFOOT, DUNCAN.—"Improvements in printing or dyeing textile fabrics."

"The treatment of textile fabrics dyed with madder not previously treated with acids or alkalies," by the following process or "any mere modification thereof." "The goods after coming from the dye vat are steeped in or passed through an alkaline solution," common soda preferred, but other alkalies may be used, the strength of which varies with the class of goods to be treated, but as a general rule about 15 degrees of strength (about 15 lbs. of alkali to 100 lbs. of solution). "The goods are then washed and again steeped or passed through an alkaline solution, usually weaker than that of the first, but not always so, to which is added a proportion of chlorine," which also varies with the class of printed or dyed goods under treatment, but, "as a rule about 40 degrees of chlorine to 60 of the alkali is used. The goods are next passed through a cistern of boiling water and from thence into clear water; or in lieu of passing the goods under treatment a second time through an alkaline or chlorine solution they may be finished at one operation by passing them through either the first or last mentioned solutions direct from the dye vat and without the use of soap." With these modes of treatment it is stated "the colors of the printed or dyed goods are heightened in brilliancy, and the grounds or unprinted or undyed portions are left clear and pure." "And by these means the ordinary use of soap is dispensed with and a considerable saving in the prime cost is effected."

[Printed, 4d. No Drawings.]

A.D. 1863, October 14.—No. 2515.

ROWLEY, JOHN.—(*Letters Patent void for want of Final Specification.*)—"Improvements in apparatus for washing, scrubbing,

"bleaching, and discharging impurities or other matters from woven or other fibrous materials."

These improvements consist, "of a long trough or chamber, having a raised chamber at one end, in which a head of water is maintained, as afterwards described." A perforated false bottom is arranged within the trough or chamber, the upper surface being formed with angular or other shaped transverse ribs. Over this ribbed surface a floating scrubber is arranged to move to and fro by any suitable mechanical means, the distance between the ribbed surface and the under surface of the scrubber being regulated by the height or level to which the water is allowed to rise in the trough or chamber. "The floating scrubber consists of a frame of wood to the under side of which coir or other rope, fish skin, stout leather or hide, india-rubber, surfaces of lead, or other suitable materials are firmly attached." The means preferred to be employed for raising the water or cleansing fluid into the raised chamber is as follows:—Near to the vertical chamber a wheel or drum is supported upon an axis turning in bearings at each side of the apparatus, rotary motion being communicated thereto in any convenient manner. Around the circumference of the drum, chambers or recesses are formed, open on the periphery but closed at each end by the disc ends of the drum. The chambers formed on the circumference of the drum rotate, this guard serving to seal or nearly close the openings to the chambers whilst rising up out of the trough. A chain or other pump for raising the water may be substituted for the above arrangement, if desired. A fuel hopper having feed rollers delivers the materials to be operated upon into the apparatus. Steam pipes are arranged below the stationary scrubbing surface.

[Printed, 4d. No Drawings.]

A.D. 1863, October 20.—No. 2561.

INGHAM, WILLIAM, and WOOD, ISAAC.—"Improvements in the manufacture of copper rollers used for printing calico or other materials."

This invention consists in "the system of driving the bushed rollers by means of collars, each having a nib or key which fits the groove of the mandril and passes through a slot in its corresponding disc or bush." A metal disc or bush is

in the interior of each end of the roller; holes are bored "in the centre of the disc to correspond with the taper of the maundril so as to secure perfect mechanical truth." Also placing "at the outside of each disc a collar, having a nib or key which fits the groove of the maundril, and passes through a slot in the disc, and when the roller is in its right position the collars are held fast by set screws." By these means the weight of the roller is reduced and "a great saving in the working capital" effected.

[Printed, 8d. Drawing.]

A.D. 1863, October 20.—No. 2571.

DIXON, WILLIAM ADAM. — (*Provisional protection only.*) — "Improvements in making aluminate of soda and other aluminous salts."

The aluminate of soda obtained by the processes afterwards described "may be advantageously used in dyeing and printing, the cloth being worked through the solution, or being printed with the solution combined with a thickener, and thereafter exposed to the air, or to carbonic acid, or being passed into a solution of salammoniac or into a dilute acid." The processes have for their object to make the aluminous salts "practically free from iron, and in an economical manner."

"According to one modification a solution of tersulphate or other sulphate of alumina, either natural or artificial," more or less pure, is "neutralized with carbonate or hydrate of lime, and the precipitate allowed to settle, and the clear liquid poured off. If the proportion of alumina contained in the precipitate is not known it is ascertained and the precipitate is treated with rather less than an equivalent proportion of caustic soda lye, by which means" the alumina alone is dissolved, and the "impurities are left behind." Instead of caustic soda an equivalent of carbonate of soda, with the same of hydrate of lime may be added.

Another modification is to evaporate either of the above salts of alumina, drive off the sulphuric acid, and fuse the residue with an equivalent of caustic or carbonate of soda until the oxide of iron falls to the bottom; or the iron may be determined, and sulphide of sodium added to produce

sulphide of iron, "the quantity of caustic soda or carbonate of soda added being diminished in proportion to the sulphide of sodium employed."

[Printed, 4d. No Drawings.]

A.D. 1863, October 22.—No. 2609.

DICKINS, THOMAS, DICKINS, ALBERT LUNGLEY, and HEYWOOD, HARVEY. —(*Provisional protection only*).—"Improvements in dyeing threads of silk."

This invention relates to a method of dyeing whereby is economized "the mordant used in the production of what are commonly called weighted threads of silk." "This weighting may be accomplished by applying the mordant several times and washing it off between each operation," but the result is the "production of much waste, the material being in too dilute a condition to be conveniently recovered." This waste is obviated "by removing the superfluous mordant through the agency of a revolving apparatus known as the 'hydro-extractor,' whereby it becomes thrown off;" or the "goods are placed 'under pressure so as to squeeze it off,' and thus the mordant is collected 'nearly in its original strength.'" Between these operations, however, the threads are slightly washed "in order to prepare them, as is well known, for another quantity of mordant."

[Printed, 4d. No Drawings.]

A.D. 1863, October 24.—No. 2628.

BAKER, FRANCIS BRYAN.—"Improvements in apparatus used in dressing lace and other textile fabrics, and suitable also to the application of dyes or coloring matters thereto."

"For the purpose of applying 'dressing' or other liquid material to the surface or surfaces of lace and other fabrics, and also for steaming the said fabrics, when requisite, whilst the fabrics are distended upon a 'frame' for the purpose of being operated upon, I employ apparatus which consists of the following parts:—First, of a moveable 'wetter;' second, of a moveable 'clearer;' third, of a moveable 'steamer;' fourth of a tramway or series of rails upon which the 'wetter,' 'clearer,' and 'steamer,' are caused to travel; the tramway may be moveable or stationary. The 'wetter' consists of a moveable box, capable of

“ being propelled along the tramway, and containing one or more rollers, so placed that when the box is supplied with any liquid these rollers shall be partly immersed therein. The axles of the rollers rest upon ‘bushes’ placed in the box.” The ‘clearer’ consists of a series of rollers carried similarly to those described in the ‘wetter,’ but they do not rotate in any liquid.” “These rollers are not supplied with ‘dress,’ but are intended to regulate the ‘dress’ applied by the wetter.” “In the wetter, and also in the clearer, revolving brushes may be employed in place of rollers.” The “steamer” consists of a hollow vessel, mounted similarly to the wetter and clearer, and having a suitable opening for the escape of the steam.

“The ‘steamer’ is used in connection with or independently of the wetter and clearer, for the purpose of producing a peculiar finish upon certain fabrics.”

“The fabric to be dressed being distended upon the dressing frame in the ordinary manner, I adjust the length of the wetting vessel as previously described to the width of the fabric, and also adjust the rollers in a similar manner; I then supply the vessels with the requisite ‘dress,’ so that as rollers rotate the lower surfaces are immersed in the dressing material, I then place the wetter underneath the fabric, raise the upper frame so that the rollers are brought into contact with the surface of the fabric.” The ‘wetter’ is then moved along the tramway, and the friction of the fabric against the rollers causes them to revolve, and thus applies the dress to the fabric. The ‘clearer’ is now brought into contact with the fabric by being conducted along the tramway with its rollers at the proper elevation and kept in motion forwards or backwards until the dress is properly and equally distributed. For the purpose of producing greater surface friction, one or more rollers are applied when requisite to the upper surface of the fabric so as to bear it down upon the wetting or clearing rollers; arms to carry these rollers are formed on the upper frame of the carriage.”

“In order to apply dyes or coloring matter to the fabric, I place on the tramway apparatus similar to the ‘wetter,’ but supplied with dye or coloring matter in place of the ordinary ‘dress,’ and the roller is fashioned according to

“ the pattern in which the color is to be applied to the fabric
 “ having raised ribs upon it if stripes are to be made on the
 “ fabric; the apparatus is run along the tramway in the
 “ same manner as the wetter already described, and it leaves
 “ color on the parts of the fabric with which it comes in
 “ contact.”

[Printed, 6d. Drawing.]

A.D. 1863, November 5.—No. 2739.

SMITH, RICHARD.—“ Improvements in preparing or obtaining
 “ coloring matters.”

“ Treating coloring matters such as are obtained by the
 “ processes described ” in No. 1945, A.D. 1860, and “ obtaining
 “ new coloring matters therefrom.”

First, “ the purple, after it has been purified in the usual
 “ way is heated in the dry state with a combination or mixture
 “ of aniline and salicylic acid to a temperature of about 360°
 “ F., until a violet coloring matter is obtained,” which is
 purified by “ weak acids.”

Second, “ heating the crimson or magenta ” obtained in
 former Patent “ in the dry state, with about half its weight
 “ of hydrochlorate of aniline until a brown coloring matter
 “ is obtained.”

Third, “ obtaining violet coloring matters by heating
 “ together to a temperature of about 380° F. about 1 part
 “ of dry magenta, with a combination or mixture of about
 “ 1 part of aniline and one-eighth to one-sixth part of
 “ salicylic acid, or with a combination or mixture of about
 “ one-fourth part of salicylic acid, and about 2 parts of the basic
 “ oil or oils obtained from coal tar, and which boil at a lower
 “ temperature than aniline,” or with a combination or mixture
 “ of about one and a third parts of carbolic acid, and one-
 “ third part of salicylic acid, the carbolic acid being saturated
 “ or not with ammonia.” The word aniline is “ intended to
 “ include such homologues of aniline proper as may act
 “ similarly in the combinations herein-before described.”

[Printed, 4d. No Drawings.]

A.D. 1863, November 5.—No. 2747.

TAIT, ROBERT THOMAS.—“ Improvements in the manufacture
 “ of woollen garments.”

In place of "marking out on the piece of woollen cloth with chalk or otherwise the forms of the different parts of the garments to be made," printing "on the woollen cloth or fabric by means of rollers or blocks the outline of the piece to be cut from it; his outline serves us a guide for the cutter, and the time which would otherwise be expended in chalking or marking by hand is saved. The frame of the machine carries a pressing roller, above which is an upper or printing roller;" this roller has a surface of wood upon it on which the contour of the several parts of the garments to be made is marked out by strips of metal attached to the surface in the manner common in making blocks for blocking or printing fabrics. The bearings of the printing roller are mounted in guides on the frame, and by means of screws they can be set up so as to "press on the fabric which passes between the rollers" with any force which may be desired. The printing roller is caused to revolve by means of a spur wheel on its axis, gearing with a pinion having on its axis a hand-wheel, by means of which it is turned. Colour is fed on to the roller from a colour trough by means of two rollers, one of which revolves in the colour trough. The woollen cloth to be marked for cutting passes first under two rollers so as to keep it stretched as it passes along the table to be printed.

[Printed, &c. Drawing.]

A.D. 1863, November 6.—No. 2751.

COATES, CHARLES.—"Improvements in machinery for printing cotton and other fabrics."

First, "the adjustable endless bands with needle points or other holders which are capable of being set to the pattern on the fabric."

Second, "the grooved boards and rollers for guiding the bands and the fabric."

Third, a printing roller with "adjustable blocks or surfaces, by means whereof the patterns on the roller can be regulated so as to correspond with the pattern on the fabric," or any combination of parts for effecting the same object."

"When the fabric on which a pattern in stripes or rows has been printed enters the machine, it passes under little

" rollers which are supported in or guided by needle points
 " or holders. As the fabric is carried forward, the attendant
 " or attendants move the needle points or other holders to
 " bring the stripes in line with grooves made in suitable
 " guide rails or rollers; the fabric is then carried forward to
 " the printing roller." "The rollers or discs, either engraved
 " or otherwise, by which the fabric is pressed against the
 " printing cylinder, are mounted on a mandril, and they are
 " divided into three or other convenient number of sets, each
 " set being capable of lateral adjustment by screws or other
 " equivalent agents, so as to be able to regulate their distance
 " according to the distance between the stripes on the fabric
 " to be printed."

An apparatus for stretching the fabric as it enters or passes through the machine consists of "an axle and two rails around which the fabric is taken, and by turning the axle partly round by a worm and wheel, or otherwise, the fabric is tightened and stretched."

[Printed, 1s. 10d. Drawings.]

A.D. 1863, November 6.—No. 2762.

PERKIN, WILLIAM HENRY.—"Improvements in the manufacture of coloring matters suitable for dyeing and printing."

Producing "from mauveine" (the base of mauve or aniline purple), or "it may be from a carbonate or feeble combination of the said base, other coloring matters of redder and also of bluer shades." "To produce the redder colors, the mauveine is subjected to the action of the chloride, bromide, iodide, or other salt of methyl, ethyl, propyl, butyl, amyl, ethylene, amylen, allyl, or other organic radical," as follows:—12 parts of weight of dry mauveine are mixed with 10 parts of iodide of ethyl and 60 or 70 parts of methylated spirit are added. The mixture is put into a strong closely covered copper vessel, which is secured with screw bolts, and the joint is made tight by means of a vulcanized india-rubber washer. "The vessel is then by means of a water bath kept at a temperature of boiling water for 4 or 5 hours, and at the end of that time its contents are mixed with methylated spirit" ("the product of 2½ lbs. mauveine into 14 gallons

"of commercial solution"). The solution is ready for use. If a paste be required, a strong solution of salt throws down the color from the commercial solution. "The residue on filtering the diluted product from the converting vessel contains a mauve extracted from it by repeated boiling with spirit." "To produce violet or blue colors the red purple product is treated with alkalies or alkaline solutions, and the resulting product purified."

[Printed, 4d. No Drawings.]

A.D. 1863, November 11.—No. 2803.

DAWSON, DAN. — "Improvements in the production of colours for dyeing."

"The production of all intermediate shades (composed of red and blue) between 'magenta' and blue, by heating together iodide of allyle and rosaniline, or iodide of allyle and any salt of rosaniline." In preference 2 parts of iodide of allyle and 1 part of rosaniline, or of a salt of rosaniline, are heated together, in preference, in a close vessel between 180° and 240° Fahr. In some cases spirits of wine are added before heating. "The change of colour caused by the reaction must be carefully watched, and the operation must be stopped as soon as the desired shade has been attained."

[Printed, 4d. No Drawings.]

A.D. 1863, November 18.—No. 2892.

NICHOLSON, EDWARD CHAMBERS.—"Improvements in the manufacturing of coloring matters suitable for dyeing and printing."

"The production of coloring substances by the action of the iodides and bromides of alcohol radicals on roseine, magenta, or other salt of rosaniline." In preference 1 equivalent of the salt of rosaniline is mixed with 3 equivalents of the salt of the alcohol radical (iodides or bromides of ethyl, methyl, amyl, propyl, or capryl), and heated together "alone or with spirit to a temperature of 212° (or it may be somewhat higher) in a close vessel under pressure." The longer the process is continued the bluer the mixture will become. In order to recover the iodine, the product, either before or after boiling with spirit, is boiled with caustic alkali; the

base precipitates and is washed from alkali, and is dissolved in acid and alcohol or acetic acid and water.

[Printed, 4d. No Drawings.]

A.D. 1863, November 18.—No. 2894.

HIRZEL, HEINRICH.—(*Letters Patent void for want of Final Specification.*)—"Improvements in the manufacture of coloring matter suitable for dyeing and printing."

"Crystals of roseine or red aniline dye are dissolved in aldehyde, and then in succession nitric, sulphuric, and muriatic acids are added. Afterwards sulphide of ammonium is also added, the mixture being stirred whilst this is done. The compound is then heated" until it changes from green into the blue colour, and it is then poured into four or five times its bulk of boiling water, and boiled for some time, and when cold filtered. In place of the red dye other colours may be used, but they are more expensive. Other alkaline sulphides may be used in place of sulphide of ammonium. "An analogue of aldehyde may be substituted for aldehyde; or, in place of employing an alkaline sulphide and aldehyde, or an analogue thereof, the products resulting from their mutual action may be employed, as, for example, the sulphide of methyl or other sulphide of an alcohol radical."

[Printed, 4d. No Drawings.]

A.D. 1863, November 24.—No. 2952.

HOWLETT, WILLIAM.—(*Provisional protection only.*)—"Improvements in printing floor cloths, carpets, and similar goods, and in the machinery or apparatus to be employed therein."

The material to be printed is wound from off a roller over a suitable printing table, over which and above the surface to be printed are fitted transverse supporting rails, which carry a travelling table and a printing block frame or holder, which is connected with the table so as to travel with it across the width of the fabric to be printed. "An endless band or chain, or other equivalent device, is adapted to the travelling table, whereby the pads with their blocks are presented to the operator in the order required. The block form or holder consists of a double frame, the one part fitting inside

“ the other, and being connected therewith by india-rubber
“ or other springs.” “ Into this inner frame is inserted the
“ printing block, ready furnished with color, and it is pressed
“ down on to the surface to be printed ” by an arrangement
like the screw or fly press, &c. In combination with the
pressure, employing percussion by a weight descending at the
proper time required. To assure accuracy of register, em-
ploying a spring catch, which may be attached to any portion
of the travelling table or block holder, and is caused to slide
along a rail or bar having a series of notches or holes made
at suitable intervals according to the size of the printing
blocks. “ This spring catch, on entering one or other of the
“ holes or notches, serves to retain the block holder in its
“ exact position without requiring any minute attention ” of
the workman.

[Printed, 4d. No Drawings.]

A.D. 1863, November 26.—No. 2972.

THORPE, JOHN.—Making patterns “ upon straight or gored
“ shirts ” to serve as a guide for sewing and embroidering.

The invention consists in using tapered or conical rollers
with the required design engraved thereon, which rollers “ are
“ made to rotate, and being pressed against the cloth leave an
“ impression of the design thereon, the roller being fed by a
“ suitable inking roller.” The marking roller is carried by a
“ radial bar or fixing turning upon a fixed centre.”

[Printed, 8d. Drawing.]

A.D. 1863, December 3.—No. 3040.

KNOWLES, THOMAS.—“ Improvements in the manufacture of
“ rollers or cylinders used by calico printers, which improve-
“ ments are also applicable to other purposes.”

These improvements are, “ the covering of the old or worn
“ out copper or brass rollers ” with “ shells or rollers of copper
“ or brass ” as follows :—By driving or forcing an outer shell
or roller upon them in any suitable manner, and putting
“ a succession of shells on the inner roller in the same manner,
“ which outer shells are being continually changed and put on
“ and taken off, according to the patterns, as long as the said
“ roller lasts,” by this means dispensing “ with the necessity
“ of fixing the mandril each time the roller requires renewing,”

and also diminishing "at least one-third the weight of metal required in stock." "Embossing and other rollers can be made in the same manner, the outer shells being made of any thickness or strength as may be found most useful, and for the purpose of more easily forcing the outer shell on the inner shell or roller," making "them slightly taper or conical," but the invention is not confined "to that principle and the rollers can be turned and polished in the usual manner without any inconvenience to the trade." The outer is maintained in its right position on the inner shell or old worn out roller by a nib or key.

[Printed, 8d. Drawing.]

A.D. 1863, December 4.—No. 3045.

HUGHES, EDWARD JOSEPH.—(*A communication from Honoré Cordillot.*)—(*Provisional protection only.*)—"Improvements in the process or processes of producing aniline black on cotton fabrics or yarns."

"Take 1,700 parts of starch or other suitable thickening, 45 parts of chlorate of potash, and when dissolved add 120 parts of muriate of aniline or other suitable salt of aniline, and add cold 120 parts of ferricyanide of ammonium; print the colors as usual, and age the goods two or three nights until complete oxydation takes place, then raise the color by washing or passing it in a weak alkaline solution." "For dyeing take the same proportions, but use water only instead of a thickening substance."

[Printed, 4d. No Drawings.]

A.D. 1863, December 5.—No. 3062.

JOHNSON, JOHN HENRY.—(*A communication from Rosine Saiglan Bagnères.*)—"Improvements in washing textile fabrics, and in the machinery or apparatus employed therein."

The materials to be acted upon are subjected "to one or more steepings or soakings in a bath consisting of a solution of natural or artificial sulphate of soda at an elevated temperature, whereby the grease and other impurities are removed."

This material may be regarded as a substitute for soap that possesses some affinity to bleaching powders and liquors.

[Printed, 8d. Drawing.]

A.D. 1863, December 8.—No. 3096.

HENRY, MICHAEL.—(*A communication from Charles Joseph Louis Meynard.*)—"Improvements in apparatus for regulating the passage of aeriform and other fluids."

"The combination of a valve, slide, tap, door, louvre, or other contrivance for intercepting the passage of aeriform or other fluid with an instrument or apparatus acted on by the transmission and interruption of electric currents, or the production, cessation, and reproduction of electric action, such transmission and interruption, or production and cessation, resulting from the variation of pressure, speed, temperature, or other variable effect, action, or condition of, dependent on, or connected with the passage of fluid." As an example, "a pressure mercury gauge is fitted to the steam pipe, and conducting wires are carried into the tube of the gauge to a point above any desired or determined level of the mercury. The wires communicate with an electro-magnet, which works regulating apparatus connected with a throttle valve. When the pressure exceeds its proper point, and the mercury rises to the wires, electric contact will be made, and the regulating apparatus will act and move the throttle valve till the pressure becomes reduced and the mercury falls and breaks contact." Another example is given, and it is stated that "the same mode of regulating the passage of fluids may be applied for controlling temperature in drying chambers, conservatories, dyeing vats, stills, and other apparatus, by substituting a thermometer for the pressure gauge, the rise and fall of the mercury in the thermometer making and breaking the electric circuit," and acting "on a valve for admitting or intercepting steam."

[Printed, 8d. Drawing.]

A.D. 1863, December 24.—No. 3259.

LLOYD, NATHANIEL, and HARGRAVES, EDWIN.—"Improvements in treating printed and dyed fabrics."

"The use of an oily emulsion or solution of an albuminous substance or a mixture of these to be applied previous to soaping" as follows, "for the purpose of improving the dyed color." The fabric (cotton) is printed in aluminous or other mordants and dyed with madder, or garancine, or

mixtures of these with other dye stuffs in the usual manner, and dried or not, are passed through an emulsion of oil and alkali, preferring ammonia or carbonate of soda or potash dissolved in water, "generally using vegetable oils, and preferring amongst these gallipoli oil." "The proportion of alkali to oil is not very material," but the following has been found to produce a good result:—To one gallon of water add "two ounces measure of oil, and one ounce measure of liquid ammonia, specific gravity 0·880 or thereabouts," pass "the dyed fabrics through this mixture," squeeze out the excess, generally dry them, "and steam them in the usual" manner "for about half an hour then soap and finish them as usual." "The steaming, though preferable, is not essential." For the purpose of this invention a solution of soap or of albumin, or an albuminous substance, such as serum of blood, gluten, casein, and such like substances may be used, and "when such substances are insoluble in water, bringing them into solution with a small quantity of alkali. The process of application being the same as that described for oil." "An emulsion of oil made by mixing oil and albumen, or albuminous substance and water," forms a suitable mixture for this purpose.

[Printed, 4d. No Drawings.]

A.D. 1863, December 30.—No. 3302.

PHILLIPS, GEORGE.—"Improvements in the production of aniline colours."

"The combining with aniline or its homologues proto-sulphate of iron or other suitable proto-salt of iron or protoxide of iron, for the purpose of controlling the action of the nascent oxygen which is liberated during the process by the addition of any suitable agent." As an example of the mode of proceeding, "100 parts of sulphate of aniline should be combined with 300 parts of protosulphate of iron, commonly known as green copperas, and to this 40 parts of hypochlorite of lime (known as bleaching powder) dissolved in water are to be added. It is preferable to dissolve the aniline and iron salt in hot water, and when the solution is cold the solution of hypochlorite of lime may be added to it. The whole is then to be kept at a temperature of about 212° F.

" for from 1 to 4 hours, according to the shade of colour required." "By varying the quantity of the hypochlorite of lime various shades or tints may be obtained. The length of time the boiling process is to be kept on must depend upon the quantity of hypochlorite of lime or bleaching powder employed in the operation. The colour thus obtained is soluble in water and fit for the dye bath upon being filtered, and will dye silk, wool, linen, and other materials of a durable lilac or purple, as the case may be, or it may be obtained in a solid state by the ordinary well-known methods." The colour may be formed either in hot or cold solutions, but, in preference, heat is applied as described. "The colour may also be produced by mixing the materials together in a solid state, with or without the addition of water, and submitting the mixture to a temperature of about 230° F." Chlorine water and chlorine gas may be used in place of hypochlorite of lime or bleaching powder, but the latter is preferred.

[Printed, 4d. No Drawings.]

A.D. 1863, December 31.—No. 3307.

DALE, JOHN, and CARO, HEINRICH.—"Improvements in obtaining colouring matters for dyeing and printing."

First, "the production of a yellow coloring matter by treating aniline or salts of aniline with alkaline nitrites" as follows:—"Two equivalents of neutral hydrochlorate (or other salt) of aniline are intimately mixed with one equivalent of nitrite of sodium (or other alkaline nitrite) and one equivalent of hydrate of sodium (or other alkaline hydrate). This mixture is moistened with water" and well ground together until it is of a bright yellow colour, when it is repeatedly washed with cold water, filtered, pressed, and dried, the colour remains in the state of fine yellow powder, which may be purified by crystallisation from its solution in boiling alcohol, benzol, or petroleum, or by dissolving it in warm dilute hydrochloric acid and precipitating it by caustic soda.

Second, producing "brown coloring matters by treating", phenylenediamine or its homologues with alkaline nitrites," by replacing aniline as used in the above described process by one of these substances produced by the reduction of binitrobenzol, or toluol, or their homologues.

Third, producing "purple or blue coloring matters by heating salts of aniline mixed with metallic nitrites, or with the products resulting from the action of nitrous acid or its salts upon aniline;" as an example, one part of nitrite of sodium is mixed with nine or ten parts of aniline, and the solution neutralized with muriatic acid is heated from 212° to 248° Faht., the blue colour is developed by adding an excess of alkali and using steam to drive off aniline, the colour is filtered, washed, and dissolved in alcohol or acetic acid. This process is modified by commencing with the yellow.

Fourth, "rendering the residue of the aniline mauve manufacture above mentioned suitable for a dye by depriving it of its metallic constituents" by boiling with mineral acids; dilute hydrochloric acid is found to answer the purpose.

[Printed, 4d. No Drawings.]

1864.

A.D. 1864, January 20.—No. 152.

LIGHTFOOT, THOMAS, BARNES, GEORGE POWELL, and LIGHTFOOT, JOHN.—"Improvements in fixing colors on woven fabrics or fibrous materials."

"The use of stale urine, human or animal, but by preference human, and coal gas water neutralized by adding arsenic or phosphoric acid," "either separately or combined, for fixing mordants on cotton, &c. The stale urine, neutralized as described, is used in the proportion of "about one gallon to one hundred gallons of water for ordinary purposes." When neutralized gas water is used instead of urine, about one third of a gallon is taken in place of one gallon, "the gas water standing at 4° to 5° Twaddell before being neutralized." In practical operation, the stale urine is made slightly acid with the arsenic or phosphoric acid and the excess of acid is neutralized by chalk, "about one ounce of chalk for each gallon of urine." When the liquor is used, it is stirred up to make use of the muddy settling with the stale urine. The liquor as above "will require about the same quantity of acid as is used for neutralizing."

ference two measures of common water are added "to one measure of gas water, calling this the same strength as "neutralized urine, and using the same quantity in all "cases." It is preferred to use "a mixture of these two "liquors in any suitable proportion to the use of neutralized "gas water alone." For light madder and garancine work ten gallons of the liquor are added to 1000 gallons of water, for dark garancine work (chocolate or red blotches) 15 gallons are added. For second or after dunging, the liquor and cow dung are used in certain proportions, and dark and light garancine work is set with the liquor and cow dung in a bath in certain proportions.

[Printed, 4d. No Drawings.]

A.D. 1864, January 23.—No. 200.

LUCIUS, EUGEN.—"Improvements in the manufacture and "production of colors."

First, producing blue and green colours from rose aniline or its salts as follows :—Dissolving 1 part by weight of sulphate of rosaniline in a mixture of 2 parts by weight of sulphuric acid, and from 2 to 4 parts by weight of water, adding 4 parts of aldehyde, and heating the mixture to about 50° C. until a small quantity "dissolved in about 50 times its weight "of alcohol yields a greenish blue solution."

Second, adding to this mixture from 300 to 500 parts by weight of a saturated solution of sulphuretted hydrogen in water, gradually increasing the temperature of the mixture to from about 90° to 100° C., adding, during the heating, from 10 to 20 parts of a saturated solution of sulphurous acid and filtering the liquid so as to separate the blue colour which has been precipitated.

Third, obtaining the blue colour separated as above in a useful form for dyeing by subjecting the precipitate to the action of alcohol or any suitable solvent.

Fourth, obtaining the green colour in a solid form from the green liquid by adding to it from 5 to 20 parts of a common salt, and adding a solid substance, such as soda, or other suitable substance.

powder is triturated with about 20 parts of water, then about two parts by weight of sulphuric acid are added, and "from 50 to 70 parts by weight of alcohol." When this solution is used for dyeing it is mixed "gradually with water acidulated with sulphuric acid."

[Printed, 4d. No Drawings.]

A.D. 1864, January 29.—No. 248.

DAVIS, HENRY ALBERT.—(*Provisional protection only.*)—"Improvements in apparatus used in printing with various colors."

Constructing a frame "to contain any requisite number of ink rollers and tables according to the number of colored inks or colors intended to be used." At the side of the framework is fixed "the feed rollers turning on their axes in bearings fixed to the plates or tables and revolving on the tables taking up the ink or coloring matter from grooves thereon." Another set of inking rollers are "connected by a rod, which receive the ink or coloring matter from the supplying rollers, pass over the table, then over the type, and thereby impart all the colored inks or coloring at one operation." The rollers "are driven by an endless band from a driving wheel over the inking tables and type, and then on to a table sufficiently large to allow them to remain at rest, whilst the blocks pass up side grooves or rods." The driving wheel is fixed to a block, and the requisite revolving motion is given to it by hand or power; the upper pressing force is given "by a lever attached to the block or other mechanical contrivance, and the downward pressure by an ordinary printing press or other suitable power." The blocks of any suitable strength are made "to recess one into another in the telescopic form; and to print on a large scale" it is "necessary to obtain a support to the bottom of the last block that descends," which is accomplished "by causing large bolts to shoot out of the sides when the blocks are raised," and causing "them to recede or go back so as to be out of the way when the blocks descend by the action of the lever or other suitable means."

"It is evident that instead of types I can use dies, lithographic stones, or other means for producing colored devices

“ on envelopes, printing or stationary paper in various colors
“ for books, placards, samples for calico printing, and other
“ similar purposes.”

[Printed, 4d. No Drawings.]

A.D. 1864, February 3.—No. 286.

WATSON, WILLIAM, and WATSON, WILLIAM HENRY.—(*Provisional protection only.*)—“ Improvements in the manufacture
“ of blue color for dyeing and other purposes.”

Mixing one part of “rosaniline with two or more parts of
“ commercial anniline and one part (all by weight) of any
“ of the following gums, resins, or substances, that is to say,
“ gum lac, colophony or common resin, gum, gamboge, the
“ acid or acids obtained by the saponification of castor oil,
“ and the subsequent decomposition of the soap formed by
“ such saponification and the acids known as camphoric and
“ stearic acid.” The rosaniline, the aniline, and one or more
“ of the above-named substances,” being “heated together
“ in a suitable vessel to a temperature of about 350° F. a blue
“ color is produced in a time varying from a few minutes to
“ about half an hour, which color may be dissolved in alcohol
“ or various other solvents which are well known, and may
“ then be used for dyeing and other purposes.”

[Printed, 4d. No Drawings.]

A.D. 1864, February 5.—No. 301.

LUCIUS, EUGEN.—“ Improvements in the separation and
“ purification of colors.”

These improvements relate to colours derived from rosaniline
or its salts by means of aldehyde or its homologues in con-
junction with an acid or by means of protochloride of tin, &c.
The bodies and compounds which have been found “capable
“ of effecting the desired separation are animal or other de-
“ colorizing charcoal, metallic sulphides, such as of arsenic
“ or antimony; oxides, such as oxides of tin or antimony;
“ basic salts, such as basic chloride of antimony or basic salts
“ of bismuth; precipitated silica or silicates, finely divided
“ sulphur, China clay, kaolin,” or “any body, substance, or
“ compound which is insoluble or nearly so in the solution
“ of the colors on which it is desired to operate and which
“ possesses the property of removing one or more of the colors

"from solution." Any of the compounds mentioned may sometimes be advantageously formed "in the solution containing the colors on which it is desired to operate." "Thus a solution of arsenious acid may be added, and sulphuretted hydrogen may be subsequently added, &c. In carrying out the separation of the colors, the solution containing a mixture of the colors, if necessary, is diluted with water or acid water, and brought into contact with or heated with either of the above substances," employing them in such quantity that the blue colour or the blue and violet colours are separated, "taking care that the quantity employed is insufficient to precipitate or remove the green color from the solution." The solution containing the green is filtered off and employed in any desired manner. The residue is washed with water and afterward dissolved in alcohol or other solvent of the colour or colours, and the solution is employed "for the purposes of dyeing or printing."

[Printed, 4d. No Drawings.]

[A.D. 1864, February 6.—No. 319.]

MATHER, COLIN.—"Improvements in maundrills for printing rollers."

The mandril is taper near one of its ends, and the engraved copper cylinder is taper interiorly at both ends; the taper part of the mandril enters and fits into the conical mouth of the cylinder. At the other end the mandril is reduced in size, and a broad ring is fitted on to it, and is capable of sliding some distance endwise. The exterior of this ring is tapered to fit the engraved cylinder at its other end. On the mandril within the sliding ring, and also extending beyond it, a screw thread is cut, and this receives a nut, by screwing up which the sliding ring is forced forward into the conical mouth of the engraved cylinder, and the cylinder becomes firmly jammed between the sliding ring and the taper at the further end of the mandril. The sliding ring is split longitudinally. When it is desired to take off the cylinder from the mandril, a screw nut upon the sliding ring is screwed up, which, as it bears against the end of the cylinder, forces out the sliding ring. Another screw nut starts the engraved cylinder off the cone at the other end of the mandril.

In a modification of the above-mentioned plan, a sliding ring is used at both ends of the mandril "instead of having one of the conical parts a part of the mandril itself; in this case the two ends of the mandril are precisely alike, the screws which are cut on it being right and left handed, so that any friction the nuts may get from the steps or bearings in the sides of the machine may have a tendency to tighten up both nuts."

[Printed, 8d. Drawing.]

A.D. 1864, February 8.—No. 329.

LAURENT, FRANÇOIS ALEXANDRE, and CASTHELAZ, JOHN.—(*Provisional protection only.*)—"Improvements in manufacturing violet colouring matters."

Taking "aniline, or toluidine, or other homologue of aniline, or a mixture of these substances, or a substance containing some or one of them," and saturating "the same with hydrofluo-silicic acid," and thus obtaining "hydro-fluo-silicate of aniline, or the homologue thereof, by treating which with oxidizing agents," the required violet colour is obtained. The oxidizing process preferred is to mix this salt of aniline with bichromate of potash, employing six parts of the bichromate to five parts of aniline, "but in place of bichromate of potash, other chromates and bichromates may be employed, as those of soda, ammonia or lime, or other oxidizing agents may be used. The colouring matter, when formed, may be extracted and purified by dissolving in water and precipitating by saline solutions, or by dissolving in alcohol, wood spirit, or other agents."

[Printed, 4d. No Drawings.]

A.D. 1864. February 25.—No. 474.

CARTER, HENRY.—(*Provisional protection only.*)—"Improvements in the manufacture of green colouring matters to be used in dyeing and printing."

Producing "green coloring matters or dyes by taking soluble extract of indigo, or the blue or purple colors or dyes obtained from aniline or toluidine, or their analogues, or any mixtures of these," which "shall be soluble in water, alcohol, or acid, and adding thereto either sulphate of copper

" or sulphate of iron, or a mixture of these two salts in proper proportions." To this mixture is then added " oxalic acid or other mineral or organic acid " and heat is applied. " The shade of green thus produced " is sometimes varied, " by adding thereto, either during the process of manufacture " or afterwards, picric acid or any yellow or orange color " obtained from aniline or toluidine, or their analogues. The " coloring matters thus produced are then purified by processes already well known."

[Printed, 4d. No Drawings.]

A.D. 1864, February 29.—No. 495.

WORRALL, JOHN MAYO, and COOPER, SAMUEL.—" Improve-
ments in the treatment or preparation of cotton velvets
" and other looped, 'raised,' or cut pile fabrics previous to
" dyeing such fabrics black."

These fabrics are prepared with " a solution of stannate of
" soda, aluminate of soda, or other salts of tin or alumina
" previously to submitting the fabric to the ordinary process
" of dyeing black." " The proportions of the materials
" used are capable of considerable variation, but for ordinary
" purposes the following will be found available." " The
" stannate of soda should be from four to six degrees
" Twaddle, and the sulphuric acid to fix the tins at two
" degrees Twaddle; wash off and dye in the ordinary
" way."

[Printed, 4d. No Drawings.]

A.D. 1864, February 29.—No. 496.

WORRALL, JAMES PRESTON.—(*Provisional protection only.*)—

" An improved method of coloring or staining the cotton or
" back of 'union silk faced' velvets or other mixed cut pile,
" looped, or 'raised' fabrics."

Taking " either the dry extract of logwood, fustic, or any
" other material containing dyeing matter, or the woods or
" substances either in combination with any mordant or base
" or solely a mixture of such woods or dyeing substances or
" any other simple or compound coloring matter whether
" made from aniline or derived from any other source," and
dissolving " such substances in either methylated spirits or
" alcohol or other suitable solvent," and adding " such liquor

“ or decoction to a stiffening substance composed of shellac
“ and methylated spirits of wine containing stiffening pro-
“ perties and suitable for the purpose. The cloth is to be
“ passed through a suitable machine containing the stiffening
“ solution made as above indicated and afterwards dried,” or
the decoction or liquor may be used in the same manner
without mixing with the stiffening solution. “ When the
“ stiffening solution used is composed of water and gums, or
“ gelatine or other substance containing stiffening properties,”
it is proposed “ to dissolve the wood extract or coloring
“ matter before named in water and to mix the solution
“ obtained with the stiffening solution and proceed to mani-
“ pulate the fabrics as above stated;” or the decoction or
liquor may be used in the same manner without the stiffening
solution being used.

[Printed, 4d. No Drawings.]

A.D. 1864, March 1.—No. 505.

COOPER, SAMUEL, and WORRALL, JOHN MAYO.—“ Im-
“ provements in the method of dyeing or coloring certain
“ descriptions of woven fabrics.”

“ Dyeing ‘union silk faced’ looped, cut pile, or ‘raised
“ ‘fabrics’ by immersing them in a preparing solution” “ of
“ stannate of soda chlorides or nitrates of tin,” and “ fixing
“ the same therein by an acid solution previous to and as a
“ preparatory part of the subsequent process of dyeing.”
“ The fabric is to be immersed in this solution after the
“ ordinary process of stiffening, cutting, scouring, &c.,”
and after treating or immersing it “ in an acid solution of any
“ required strength,” the acid is “ then to be washed out, and
“ the fabric is then to be mordanted and died in the usual
“ manner.” The object it is stated being to colour the fabric
entirely through, “ which has not hitherto been effected,” but
has been attempted by the process of padding described in
No. 3075, A.D. 1861.

[Printed, 4d. No Drawings.]

A.D. 1864, March 4.—No. 549.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from
Otto Bredt.*)—(*Provisional protection only.*)—“ Improvements in

"manufacturing a green colouring matter, applicable in dyeing, printing, and generally as a green color."

The improvements are—"as dishydrogenized alcohol (aldehyde) which is used in producing this color and as sold in commerce, does not possess the qualities necessary for the purposes of this invention" it is prepared as follows:—Mix 350 parts of sulphuric acid and 150 parts of water together and allow the mixture to cool, "then add 320 parts of alcohol of commerce at 90° Beaumé," and ultimately pass this mixture into a retort containing "300 parts of bichromate of potass in small pieces, and 150 parts of water" and distil; the aldehyde "thus prepared should be neutral" and is rectified by two distillations. To produce the green colouring matter, dissolve with a gentle heat 1 part of crystallized fuchsine in $1\frac{1}{2}$ parts sulphuric acid previously mixed with $\frac{1}{2}$ part of cold water;" allow the mixture to cool and add 4 parts of the aldehyde prepared as above; the solution immediately assumes a violet colour. The mixture is heated by a water bath, "in a few minutes the matter changes to a blue color," when the receiver is withdrawn from the bath. If the matter is all right "a drop in a small quantity of water acidulated with sulphuric acid" when blown upon "should appear a beautiful pure blue tint." "If the water appears violet or of a violet shade" the material should be heated "until the test yields a pure blue tint," when "boiling water" and at the same time a solution of hyposulphurous soda are added, the whole is agitated, and filtered through a cloth filter lined with paper, then cool the filtrate about 24 hours, filter a second time, and precipitate with "chlorate (chloride?) of zinc, that is butter of zinc, at 53° Beaumé and dissolved "crystallized soda at 17° Beaumé," and collect the green colouring matter on a filter.

[Printed, *Ad.* No Drawings.]

A.D. 1864, March 5.—No. 563.

GRAY, THOMAS.—"Improvements in the treatment of 'jute' and 'jute' cuttings."

This invention relates to an improved method of bleaching, which consists in using soapsuds and chlorine bleaching liquor. Take jute, or jute cuttings, after having been passed *through the stocks and carding machine or tenter-hook*

machine, then place the same in a solution of chloride of lime liquor and a solution of soapsuds mixed together. First take half an ounce of soap and dissolve the same in one gallon of hot water, then take about 6 ounces of chloride of lime and dissolve the same in a half gallon of cold water and let the latter solution settle; after this pour the chloride solution into the hot soapsuds and mix together, then place about one pound of the raw material in the above-mixed solutions. This lays till the same is partially bleached to a whiteness. To improve the colour an addition of the above mixed solutions is again added to finish the material to a proper whiteness, say about 3 ounces of bleaching powder to a $\frac{1}{4}$ of an ounce of soap to same quantity of water, and as above described; after this it is then washed and hung up for drying. These improvements are additions to No. 886, A.D. 1863.

[Printed, 4d. No Drawings.]

A.D. 1864, March 9.—No. 583.

WORRALL, JOHN MAYO. — (*Provisional protection only.*)—
“An improvement in the method of dyeing or coloring
“looped, cut pile, or ‘raised’ fabrics composed of cotton and
“silk.”

This process consists “in first dyeing or coloring the cotton
“warp a ‘fast color’ by the use of Turkey red, indigo, or
“other fast colour, and by any ordinary means or process;
“when thus dyed, the silk is to be interwoven with it, and
“when so combined, the mixed fabric produced is to be dyed
“in any of the usual manners,” the object being “that when
“the woven cotton and silk is submitted to the second
“process of dyeing to color the silk, the cotton (being already
“colored) will take up a second amount of color and become
“dyed the same color as the silk, which would not otherwise
“be so inasmuch as the cotton has not as great an affinity
“for coloring matter as silk.” It is said “that cotton warp
“to be used with silk weft has been treated with mordants
“previous to weaving, but not hitherto dyed or colored before
“weaving.”

[Printed, 4d. No Drawings.]

A.D. 1864, March 9.—No. 584.

WORRALL, JAMES PRESTON.—“Improvements in dyeing or coloring looped, cut pile, or “raised” textile fabrics composed of cotton and silk.”

Using “a solution of a mordant of any of the salts of tannin, or any combination thereof which will form an insoluble salt in the fabric preparatory and previously to submitting the said fabrics to the ordinary process of dyeing with colors obtained from aniline, naphthaline, and analogous substances.” Also preparing “the fabric with stannate of soda and acid previously to the application of the tannin.” “The fabric may be passed through a solution or mordant of tannin, and then through a solution of any salt of tin, copper, antimony, or other base which will with tannin form in the fabric an insoluble salt, the ordinary method of dyeing with the aforesaid colors may then be adopted.” Or the fabric may be treated as follows:— “Mordant the fabric in a solution of stannate of soda at six degrees Twaddle, and fix with a solution of acid (sulphuric preferred) at two degrees Twaddle, wash off and pass the fabric through a solution of tannin, four ounces to five or six gallons of water; or by any other method thoroughly permeate the cloth with a solution of tannin, four ounces to five or six gallons of water, and pass it through a solution of muriate of tin or other base about the proportion of one gill to five gallons of water.” “The materials used are capable of considerable variation,” but for ordinary purposes the above “will be found available.”

[Printed, 4d. No Drawings.]

A.D. 1864, March 12.—No. 629.

DURRIEU, LOUIS ADOLPHUS.—(*A communication from François Romain Joly.*)—“Improvements in the method of clearing or causing to disappear from wool, woollen yarn, woollen fabrics, mixed woven fabrics, or felted cloths, or fabrics, the specks caused by particles of matter in wool or fabrics above-mentioned and other blemishes which do not receive the dye equally with the general body of the fabric or substance.” Placing “the fabric, wool, or yarn in a vessel containing a weak mordant salt in solution suitable for dyeing vegetable

“ matter, and one which will be best adapted to the coloring matter or dye already used and intended to be used; the most suitable mordants are well known to practical dyers.” The material “ should then be drained, and afterwards passed into another vessel containing the colouring matter or dye, which may either be a spent dye liquor,” or “ it may be a weak dye liquor made for the purpose; both the mordant and the dye liquors may be used in a cold, a lukewarm, or tepid state, so that no ill effect can be had upon the colour or shade of the fabric,” &c. under treatment. The operations are facilitated by passing the goods through vessels containing the mordant and the dye with rollers for the purpose of passing the goods through the vessels and squeezing any excess of mordant and dye out of the same. Sometimes the fabric, wool, or yarn is placed in the dyeing liquor first, and the mordant is applied afterwards.

[Printed, 4d. No Drawings.]

A.D. 1864, March 14.—No. 639.

PARKINSON, THOMAS, TAYLOR, FRANCIS, and BURTON, THOMAS.—“ Improvements in machinery and apparatus for sizing, dressing, dyeing, and drying.”

These improvements are, in reference to this subject, “ applicable to the journals of steam heated cylinders employed in machinery for sizing, dressing, dyeing, and drying,” and they consist in dispensing with the ordinary stuffing boxes, and forming a taper tap “ at the end of the axle or journal of the steam cylinder; the tap is made with two openings, one for the supply steam to enter in, and the other for the escape of the water of condensation.” The remainder of the Specification has reference to apparatus for sizing.

[Printed, 10d. Drawing.]

A.D. 1864, March 18.—No. 690.

DURRIEU, LOUIS ADOLPHUS.—(*A communication from Louis Gouchon.*)—“ Improvements in the dyeing of woollen and other fabrics.”

This invention is, in place of a metal dye boiler or vat, using a wooden one, and placing “ a cylinder or drum at the

“forward part of it for the purpose of moving the cloth in the dye, and in order to produce regular dyeing of the cloth or fabric.” Another cylinder or roller is added, which is named “the folding cylinder, over which the cloth or fabric intended to be dyed passes, which roller has a motion backwards and forwards by means of a to-and-fro or eccentric motion, whilst it receives a second motion by a strap on itself, causing it to rotate at the same time.” “On the extremity of the axle of the cylinder or drum is attached a spur wheel and a driving pulley, by which motion is given to the machine; this spur wheel works into another wheel, which is placed on a pin attached to the side of the vat, and this wheel works into another wheel which gives the motion to the to-and-fro folding roller.” A roller is placed across and in the front of the machine having “two threads or worms upon it, one right-handed, and the other left-handed. These threads meet in the middle of the roller; the use of this is to open and spread out the cloth as it passes over it.” “A jet of steam is supplied by a pipe which enters a partial double bottom; the upper bottom is pierced with rows of holes not quite horizontal, but having an oblique direction of about 130 degrees.”

[Printed, 8 $\frac{1}{2}$. Drawing.]

A.D. 1864, March 28.—No. 769.

LIGHTFOOT, JOHN.—“Improvements in dyeing and printing textile fabrics and yarns, and in fixing more permanently certain mordants thereon.”

“The use of soap and oil saponified by means of sulphuric acid, and also the use of nitrogenous compounds, such as glue, albumen, lactarine, milk, and similar substances; gluten, blood, or caseine, when applied to woven fabrics or yarns for coloring matters derived from aniline or basic substances of a similar nature, and also an improved mordant for steam colors.” The goods are padded in a solution of the same, and in some cases the substances are thickened and printed on the goods, which are then steamed and fixed in a solution of any metallic salt, preferring “alum or tartrostannate of soda solution, say about twelve ounces of alum to one gallon of water, and one ounce tartrostannate of soda to one gallon of water,” and steam either dry or wet,

but in preference dry "by the ordinary process of steaming steam colors, about one hour at high or low pressure," and "chemick" as follows, using "about one gallon of water at from 60° to 70° F., and $\frac{1}{4}$ th of an ounce of hydrochloric or other suitable acid to about $\frac{1}{8}$ th of a pint of a solution of chemick (hypochlorite of lime at 24 ozs. per gallon), or the hypochlorite of soda, potash, or ammonia may be used." The goods are rinsed or steeped "in this solution for from 15 to 30 minutes," and washed well in water. To saponify oil with sulphuric acid, "take 1 gallon of oil (by preference olive oil), and add about 3 to 6 lbs. weight of sulphuric acid, "avoiding as much as possible any rise of temperature;" allow this mixture to stand for two days, add about 3 gallons of boiling water, and about 3 lbs. of common salt or other saline salt to separate the oil, which is washed, and being still acid is neutralized or made slightly alkaline by adding "to the gallon of oil so operated upon $\frac{1}{4}$ ths of a pint of caustic soda at 70° Twaddell's hydrometer, or any other suitable alkali." "Take about 1 pint of this oil so prepared and mix it with 7 pints of water hot or cold, and pad the goods in this preparation, dry steam and chemick, as already described." The goods after preparation are put into the dye bath and kept there for "about an hour gradually raising to boiling heat." "Resin, when saponified by means of alkali, will answer the purpose." About " $1\frac{1}{2}$ gills in 1 gallon of boiling water; pad the goods in this preparation and dry; steam and chemick as before." The goods are now ready for the colours and dyes as before described. "In some instances, instead of rinsing the goods (after being padded in soap and steamed) in a solution of metallic salt or salts," it is preferred "to add" the mordant to the colour intended for printing, "and print on these colors and steam in the ordinary manner for steam colors, and then wash off in water and dry."

[Printed, 4d. No Drawings.]

A.D. 1864, April 6.—No. 859.

HUGHES, EDWARD THOMAS.—(*A communication from Alphonse Mermet and Joseph Cornaton.*)—(*Provisional protection only.*)—"Improvements in the manufacture of printed woollen velvets or plushes."

“Two binder threads and one pile thread are on one warp beam, and one pile thread and one double foundation thread on another warp beam, and there are five threads between the teeth of the comb, as the threads of the second roller can be passed through every other tooth.” Or there can be four rollers or warp beams, one for the binder, one for the stuffer, and two for the nap or pile. By these arrangements the pile is placed straight, and held firmly in its place by the double foundation, and enables it to resist the pressure of printing. The designs are printed by means of a board with brushes, arranged to any pattern, or by ordinary printing blocks or rollers, and in consequence of the texture of the fabric being stronger and more elastic than the ordinary woollen velvets and plushes, the pile after being pressed for printing springs back again, and after it has been washed it presents a correct and even surface, the colours penetrating to the bottom of the pile.”

[Printed, 6d. Drawing.]

A.D. 1864, April 13.—No. 925.

GATTY, FREDERICK ALBERT.—“Improvements in treating garancine and other products of madder.”

The said products are treated “with sulphate or other soluble salt of alumina” as follows, “for the purpose of separating therefrom a part of the coloring matter, which is injurious to the brilliancy of certain colors dyed” with these substances. Take 300 lbs. of the dry matter (if wet, equivalent to 300 lbs. of dry are taken) and add 500 gallons of water, and 300 lbs. of sulphate of alumina, or an equivalent quantity of alum or other soluble salt of alumina; the whole is boiled for about half an hour, and the liquid is drained off, and the residue washed with water until the liquid “is tasteless or nearly so,” it is then treated in a suitable vessel “with 50 lbs. of, by preference, sulphuric acid, but muriatic and certain other acids will answer the same purpose,” adding about 400 gallons of water and boiling for an hour, or “the same result may be attained to a certain degree without boiling, by leaving the guarancine with the acid and water to stand for about 24 hours,” and then drawing off the liquor, washing with cold water, and adding “about 6 lbs. of ground chalk or an equivalent quantity of carbonate of soda,

“ liquid ammonia, or other alkali; the water is then pressed out, and the guarancine is dried and ground to a powder in the ordinary way, or if found more convenient the product thus obtained may be used in the wet state.”

[Printed, 4d. No Drawings.]

A.D. 1864, April 20.—No. 981.

LEVINSTEIN, Hugo.—(*Provisional protection only.*)—“ Improvements in the preparation of purple, violet, and blue aniline dyes.”

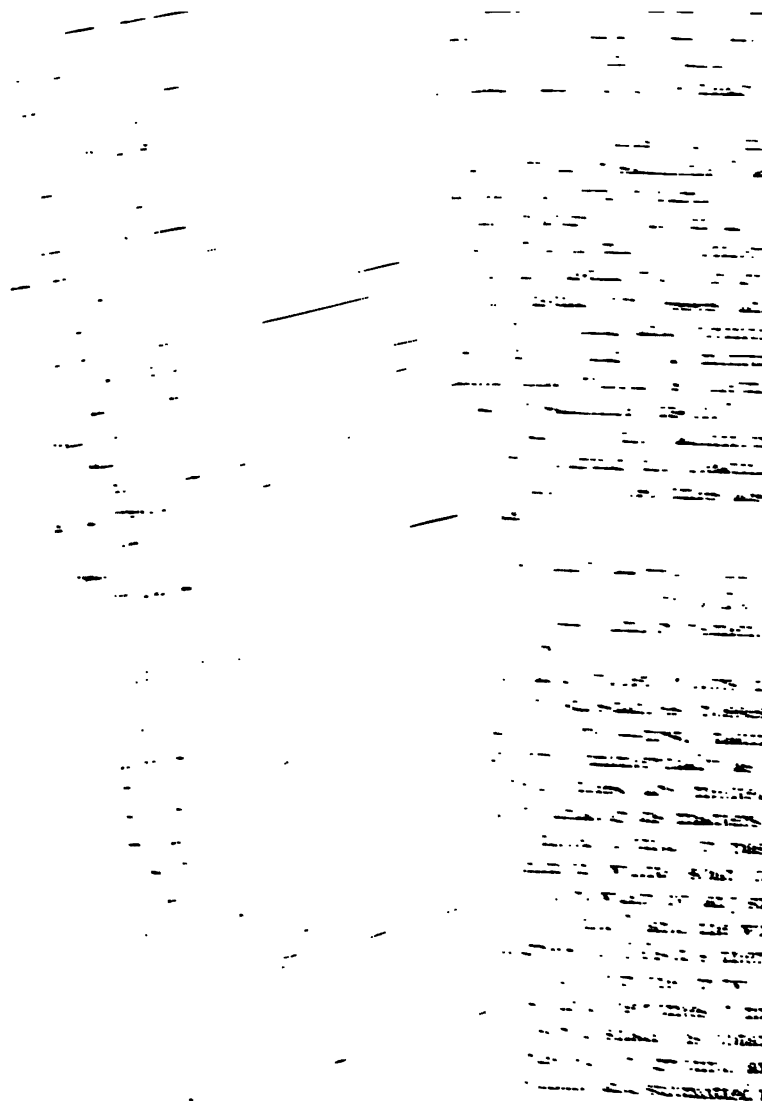
Taking the base, “ known in commerce as magenta, and also by other names, such as roseine, fuchsine, aniline red, and other similar bodies,” and mixing “ the same with nitric ether, or any other body which is chemically equivalent to nitric ether.” The proportions preferred “ are about 9 parts of nitric ether to 32 parts by weight of one of the bases above specified, but it is not essential to use these proportions.” The aforesaid mixture is heated to about 150° C under pressure, and is maintained “ at this temperature till the tint” required is obtained. In this way is produced “ either purple, or violet, or blue, according to the time, proportions, and temperature employed.”

[Printed, 4d. No Drawings.]

A.D. 1864, April 21.—No. 993.

LOMER, D'HERMAN.—“ Obtaining colouring matter as substitute for aniline colours.”

This invention consists in “ obtaining colouring matter from aloes, and bitumen of India as substitute for aniline colours,” as follows:—Take 35 ozs. of aloes and 35 ozs. of bitumen of India, grind, sift, and treat the fine powder “ in an earthenware vessel with 10 times its weight of nitric acid of the specific gravity of 1.230,” added in small portions at a time, and “ then the resulting product is evaporated to dryness. This dry resinous mass must be pulverized, and is then introduced into a suitable boiler, capable of sustaining an internal pressure of at least 12 atmospheres, and at the same time sulphuret of carbon, amounting to 10 times the weight of the powder, is also put into the boiler,” and the lid is screwed on and a gentle heat is applied. “ After 12 hours application of heat, a portion of the contents of the



“ the greasy and oily matters therefrom,” “ then wash the colors in boiling water, and dry and grind them ready for commercial use.”

Second, take the same quantities of aniline red and aniline and melt them together on a slow fire until the liquid becomes thick or pasty, “ then add thereto one part of pure stearic acid, natron freed from all moisture or water,” and heat this mixture “ to about 220 degrees of Celsius’s thermometer, “ continually stirring the same.” The mixture passes through various shades of colour, and “ finally to pure blue,” when the shade of colour required is obtained the mixture is left “ to cool and dry, and grind the same ready for commercial use.”

[Printed, 4d. No Drawings.]

A.D. 1864, May 12.—No. 1205.

KIRKHAM, THOMAS NESHAM, and ENSOM, VERNON FRANCIS.
—“ Improvements in cleaning, bleaching, and dyeing woven fabrics and piece goods.”

The goods are in preference wound on to a hollow cylinder and the fluids or liquors may be forced through them from the interior of the rollers outwards, and also drawn from the exterior inwards through the goods to the interior of the rollers. “ These rollers are placed in closed boxes or chambers within which the liquors used as above are contained, which by means of pumps or other apparatus are made to flow from the interior of the rollers outwards, or from the interior of the boxes or chambers into the interior of the rollers.” “ The form of the hollow body around which the woven fabrics or piece goods are wound may be varied, as for instance, a comparatively flat hollow body with parallel surfaces may be used,” or “ the fabrics may be folded in numerous parallel layers, and arranged between two perforated plates or surfaces, which being placed so as to divide the box or chamber, and so to form a partition therein, and the liquids may then be pumped or forced alternately through from one side of such partition, and then through the other.” No claim is made to the apparatus which is described.

[Printed, 10d. Drawing.]

follows:—In preference take “20 pounds of the strong aqueous solution of hydriodic acid” and “and the manna sugar in portions of half a pound at a time,” and “add just so much phosphorous as will cause the oil to be nearly colourless when it distils over.”

Second, “the conversion of this oil” into “purple dye stuffs by acting upon it with rosaniline” as follows. Heating this oil “with about its own weight of rosaniline and a little alcohol to a temperature of about 250° Faht.” Purple dye stuffs are produced “which may be either at once dissolved in alcohol and used in the usual way for dyeing and printing or else purified by the usual processes and then dissolved in alcohol and used for dyeing and printing;” in place of rosaniline sometimes employing “a mixture of a salt of rosaniline with ammonia, which is chemically equivalent to employing the base rosaniline itself.” The dye prepared as aforesaid is purple, but by the addition of a little acid it is made bluer. By prolonging the heating of the oil with rosaniline, “the color of the dye becomes also bluer.”

[Printed, 4*cl*. No Drawings.]

A.D. 1864, May 12.—No. 1199.

SACHS, OTTO.—(*A communication from Richard Froehling.*)—(*Provisional protection only.*)—“Improvements in the manufacture of aniline dye colors.”

Making “pure blue and violet colors in various shades, from aniline and other substances possessing similar properties thereto;” as follows,—first, taking “two parts of red aniline color, known commercially as fuchsine, roseline, roseine, or aniline red,” these are melted “in eight parts of aniline oil, or other analogous matters, until they attain the consistence of a thick liquid or paste;” “one and a half parts of the common white soap of commerce” are next dried and ground to a powder by any suitable means, and mixed “with the aniline liquid” and the whole is heated “to about 210 or 220 degrees of Célsius’s thermometer until it boils, and continue to boil it for one or two hours,” it changes through various shades and becomes “finally a pure blue color.” When the desired shade is obtained, the matter is left to cool and “is crushed or ground and mixed with an equal quantity of benzine and submitted to heat to discharge

“ the greasy and oily matters therefrom,” “ then wash the colors in boiling water, and dry and grind them ready for commercial use.”

Second, take the same quantities of aniline red and aniline and melt them together on a slow fire until the liquid becomes thick or pasty, “ then add thereto one part of pure stearic acid, natron freed from all moisture or water,” and heat this mixture “ to about 220 degrees of Celsius’s thermometer, continually stirring the same.” The mixture passes through various shades of colour, and “ finally to pure blue,” when the shade of colour required is obtained the mixture is left “ to cool and dry, and grind the same ready for commercial use.”

[Printed, 4d. No Drawings.]

A.D. 1864, May 12.—No. 1205.

KIRKHAM, THOMAS NESHAM, and ENSOM, VERNON FRANCIS.
—“ Improvements in cleaning, bleaching, and dyeing woven fabrics and piece goods.”

The goods are in preference wound on to a hollow cylinder and the fluids or liquors may be forced through them from the interior of the rollers outwards, and also drawn from the exterior inwards through the goods to the interior of the rollers. “ These rollers are placed in closed boxes or chambers within which the liquors used as above are contained, which by means of pumps or other apparatus are made to flow from the interior of the rollers outwards, or from the interior of the boxes or chambers into the interior of the rollers.” “ The form of the hollow body around which the woven fabrics or piece goods are wound may be varied, as for instance, a comparatively flat hollow body with parallel surfaces may be used,” or “ the fabrics may be folded in numerous parallel layers, and arranged between two perforated plates or surfaces, which being placed so as to divide the box or chamber, and so to form a partition therein, and the liquids may then be pumped or forced alternately through from one side of such partition, and then through the other.” No claim is made to the apparatus which is described.

[Printed, 10d. Drawing.]

A.D. 1864, May 17.—No. 1243.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Jean Henri Chaudet.*)—"Improvements in dyeing wool and other filamentous and textile materials and in machinery employed therein."

This invention is carried out "by the combination of successive and continuous chemical and mechanical operations," as follows:—"At the front end of the machine two series of iron rods are fixed through the spaces between which the slivers pass before entering the dyeing troughs, these rods are intended to keep the slivers separated from each other. The first trough has six pairs of top and bottom rollers of tinned iron, each of the upper rollers has cord or string wound round it to ensure by its elasticity a sufficient pressure on all the slivers." "The 1st, 4th, and 5th pairs of rollers lead the slivers into the dyeing trough, while the 3rd and 6th pairs are, on the contrary, raised to allow contact of air with the wool. The two rollers of each pair working in the trough are kept pressed against each other by coiled springs. The rollers of the upper pairs are kept against each other by weights. It is the same with all the other pairs of rollers in the machine. After passing through the first trough the slivers pass through a second trough which is only a repetition of half the first. These two troughs contain the baths of coloring matter; they are divided into two to allow of the easy dyeing of compound shades." The third trough is identical with the second and contains the mordant. The fourth trough is also identical, and contains the oxidating agent (neutral chromate of potash). "In dyes which do not require oxidating it is replaced by a bath mordant." The fifth trough, also the same as the preceding, contains a solution of phosphate of soda, a salt which forms "insoluble compounds with the oxides of the different mordants employed in dyeing produces by a new double decomposition the complete insolubility of the excess of dyeing material." The slivers pass into a sixth trough situated at a higher level, supplied with a stream of clear water and from thence into a draining press composed of two rollers, and over a series of cylinders heated by steam, and "finally, enter an ordinary gill box; on issuing from which

“ it is wound on bobbins ” which “ may be directly placed
“ on flyers for spinning.” “ The upper rollers of the several
“ troughs are driven by bevil gearing, and are actuated with
“ a rotary motion, which must be everywhere equal in order
“ to prevent straining of the slivers in the course through the
“ machine.” “ Instead of being drawn along by rollers as
“ before described, the slivers may be led between superposed
“ chains serving as travelling tables in the dyeing troughs.
“ In a trough containing the dyeing bath two superposed
“ endless chains are fitted and are carried by round rollers
“ which all receive a uniform motion for the circulation of
“ the chains. The chains bend and dip in the dyeing bath,
“ the slivers are led and held between them, and become
“ saturated with coloring matter in passing through the
“ trough. On issuing from the bath the slivers pass between
“ expressing rollers; ” the “ slivers pass into a second trough
“ also containing dyeing matter,” and “ on issuing from this
“ bath they pass between other expressing rollers. On leav-
“ ing these rollers the slivers may be wound on bobbins, or
“ they may be led into other baths to undergo the operations
“ of mordanting, oxidating, washing, and others as before
“ described. The number of dyeing and other troughs em-
“ ployed, their divisions and dimensions, may be varied as
“ thought desirable.”

[Printed, 10d. Drawing.]

A.D. 1864, May 18.—No. 1252.

SMITH, RICHARD.—(*Provisional protection only.*)—“ Improve-
“ ments in obtaining coloring matters.”

“ Taking a salt of rosaniline and treating it with an iodide
“ or bromide of an alcohol radical.” For example, “ one part
“ of hydrochlorate or acetate of rosaniline, two parts of
“ methylated spirit, and two parts of iodide of ethyle ” are
“ heated together “ in a close vessel at a temperature of about
“ 210 degrees Fahrenheit for about five or six hours; the
“ product is dissolved in or has added to it about two parts of
“ methylated spirit, and is then boiled with a solution of
“ caustic soda. A matter separates which must be combined
“ with hydrochloric or other suitable acid, and be dissolved
“ in methylated spirit, when it will be fit for dyeing and

"printing, the color produced being violet. If the proportions are slightly varied nearly the same results will be obtained."

[Printed, 4d. No Drawings.]

A.D. 1864, May 23.—No. 1289.

HOWLETT, WILLIAM.—(*Provisional protection only.*)—"Improvements in printing floor-cloths, carpets, and other similar goods, and in the machinery or apparatus to be employed therein."

"The painted canvas or other material to be printed or ornamented is wound from off a roller over a printing table by means of a second roller," and "by the aid of winding straps having a grip on each side of the material to be printed." Over this table are fitted "transverse supporting rails, which carry a travelling printing block frame or holder moving above and across the width of the fabric to be printed," consisting of "a double frame, the one part fitting inside the other, and being connected therewith by india-rubber or other springs. Into this inner frame or holder are inserted the printing blocks (in succession), ready furnished with color, and each block is pressed down on to the surface to be printed" by an eccentric cam, lever, or other means, "the lever or cam press travelling on a frame placed above the printing table." To insure accuracy of register, employing a spring catch attached to any portion of the travelling block, frame, or holder, the bar upon which the block travels has a series of notches or holes, and this spring catch entering one or other of these holes serves to retain the block, frame, or holder in its exact position; or in place of the spring catch movable pins may be used attached to the transverse bar. "A travelling table running on rails is also employed, which carries the whole of the color pads and printing blocks." "The color pads are carried on endless travelling bands passing over rollers," and connected to such bands "by means of pivots or journals, which maintain them in a horizontal position."

[Printed, 4d. No Drawings.]

A.D. 1864, May 25.—No. 1301.

BAIRD, JOHN, and MCINTYRE, JOHN.—“Improvements in
“ apparatus employed for clearing and bleaching textile
“ fabrics.”

These improvements are, “the general arrangement and
“ construction of apparatus employed,” “the system or mode
“ of effecting the condensation of surplus steam in vessels”
employed as above, “the mode of applying steam at the central
“ part of the boiler,” and “the automatic valve apparatus for
“ regulating the influx of the condensing fluid.” “Attaching
“ to the upper portion of an ordinary clearing boiler a self-
“ acting condenser,” “the condenser is by preference made
“ of some metallic substance and of a hemispherical or other
“ convenient form, with a larger concavity than that of the
“ top of the hemispherical or other boiler, over or on which it
“ is placed, the top of the boiler and the outer shell or casing
“ thus enclosing a considerable space or cavity between them.
“ The top of the boiler is fitted with an annular or other
“ shaped chamber placed between the two casings, the outer
“ portion of this chamber being perforated, so that when the
“ water or other suitable liquid is admitted into it the liquid
“ falls in drops like a shower upon the top of the boiler itself,
“ thus lowering the temperature of the liquid contained in it,
“ at the same time preventing an undue expenditure of heat
“ by not permitting surplus steam or gas to be generated or
“ escape wastefully through the safety valve, as formerly.
“ The boiler is likewise provided with a safety valve so that
“ in case of any contingency to the water supply all surplus
“ gases are allowed to escape, and in some cases it will be
“ found advantageous to add a vacuum valve to this boiler.”

[Printed, 10d. Drawing.]

A.D. 1864, June 7.—No. 1409.

HUGHES, EDWARD JOSEPH.—(*A communication from Charles Lauth.*)—“Improvements in dyeing and printing.”

Producing a black colour on cotton or linen cloth or yarns by
the admixture of a salt of aniline with chlorate of potash and
sulphuret or sulphide of copper, or of iron, or mixtures of the
same. The proportions are about 16 ozs. salt of aniline, 4 ozs.
sulphide of copper, and 4 ozs. chlorate of potash to 1 gallon of

water. It is stated that soluble salts of copper have been used before, but have been attended with such difficulties as to render them useless. The above mixture is to be used in printing; when it is required to dye black by this process, the sulphide of copper or iron is precipitated in the cloth or yarn, which is subsequently passed "through a solution of a salt of aniline and chlorate of potash. The cloth or yarn is afterwards aged and washed, when the black color is produced."

[Printed, 4d. No Drawings.]

A.D. 1864, June 7.—No. 1413.

CLARK, WILLIAM. — (*A communication from Jean Baptiste Domnee.*)—"Improvements in machinery or apparatus and in the application thereof for the printing of fabrics."

Printing in reserve by means of a typographic press in which the fabric to be printed is stretched upon a frame provided at each end with rollers whose shafts are fitted with ratchet wheels and palls for the purpose of keeping the fabric in a distended state and winding it off the exact length for a fresh portion to be printed. The inner roller is pivotted to the slab of a typographic press, and thus forms the centre of oscillation of the frame. This slab carries on its upper surface the engraved type or pattern, which is coated with mastic deposited in equal layers by means of printing rollers revolving on the face of the slab. The under part of the slab is furnished with a rack which gears into a toothed wheel, which wheel also gears into a fixed rack on the framing. To the centre of the toothed wheel is fitted a carriage, the back end of which is provided with a roller which supports one end of the slab. The wheel and carriage have a to-and-fro motion imparted to them by means of a crank and rod, the crank being keyed on the driving shaft of the apparatus. The frame on which the fabric to be printed is stretched is now lowered on to the slab, when a to-and-fro motion is imparted thereto, causing the types and frame connected therewith to pass under the printing roller and receive the desired impression. It will thus be seen that the fabric is subjected to two successive pressures, the one in the forward and the other in the backward movement of the carriage. The roller on the frame now winds off the fabric already printed a certain length by the

aid of the ratchet and pall, in order to print in the same manner a length corresponding thereto.

[Printed, 1s. Drawings.]

A.D. 1864, June 11.—No. 1453.

RYDILL, GEORGE.—(*Provisional protection only.*)—"Improve-
ments in treating mixed fabric rags containing vegetable
and animal fibre, and known in the trade as linsey skirtings,
shallies, frize, serge, extract wool, shoddies, and waste, to
destroy the cotton and obtain a yellow color, and give a
milling or felting property to extract rags and extract
material."

"Destroying the cotton threads in woollen rags, and chang-
ing the color of black and other colored rags" from "a
dark or light shade into a beautiful orange, yellow, or fawn
colour by means of nitric acid and water," by placing the
material in a hot solution of nitric acid and water, and allow-
ing "the same to remain for a short time, according to the
heat and strength of the liquid, until an orange, yellow, or
fawn colour is produced," when the materials are taken out,
steeped "in a solution of alum water for a short time, in order
to charge the hollow tube of the woollen hair," and finally
in a solution of an alkali (soda ash), "which perfectly removes
the acid and gives the material a milling property;" or the
materials are steeped in a cold solution of nitric acid and
water, and dried "in a hot stove or room or by any other
means," "a beautiful orange, yellow or fawn color is ob-
tained;" "then steep the same as before in alum water,
and then into an alkali of soda ash and wash." Also ex-
tracting the cotton from the above materials "by the ordinary
method, a sulphuric acid or spirit of salt and water, raise,
drain, and dry, and if not required to change the color into
an orange, fawn, or yellow colour" the woollen hairs are
charged with alum water and washed off "in a solution of
soda ash and water to give it the milling or felting pro-
perty."

[Printed, 4d. No Drawings.]

A.D. 1864, June 17.—No. 1507.

CLARK, WILLIAM.—(*A communication from Claude Viret.*)—"Improvements in apparatus for washing or dyeing skeins of
thread, silk, cotton, and other fibrous materials."

The skeins to be washed or dyed are passed round two hollow cylinders or rings carried from their centres by two arms jointed at an intermediate point of their length similar to a pair of shears, to that the rings together with the skeins may be distended to any length desired by means of a pall on the top part of one of the jointed arms taking into ratchet teeth on the opposite arm which is bent, and forms a portion of the arm jointed to a sleeve or collar which turns loosely on the vertical main shaft of the machine; upon the upper end of this sleeve or collar is a bevil wheel driven by suitable gearing and provided with arms which support an undulated ring which raises and lowers the skeins into and out of a circular trough which contains the washing liquor or dye according as it is required to wash or dye the skeins. The hollow cylinders or rings also receive an intermittent rotary motion for the purpose of changing the skein so as to successively pass the whole of its surface between the two cylinders by means of shafting driven by the gearing and furnished with friction rollers; in this manner the moment the cylinders are raised they come in contact with the friction rollers, and are thus caused to revolve, whereby all the parts of the skein which have been well penetrated by the liquid are successively transferred to a position between the cylinders. By these means a slow continuous motion with a rapid undulating motion is imparted to the cylinders containing the skeins, so as to cause their ultimate immersion and withdrawal together with the change of position of the skeins.

[Printed, 1s. Drawings.]

A.D. 1864, June 17.—No. 1509.

JOHNSON, JOHN HENRY.—(*A communication from Rosine Saiglan Bagnères.*)—"The manufacture of lyes or liquors " applicable to the cleansing and bleaching of wool and other " fibrous substances, as well as of textile fabrics."

This invention consists " in the preparation or production " and employment," for the above purposes, of " a menstruum " or lye which shall contain sulphuret of sodium, carbonate " of soda, silicate of soda or potash, and aluminate of soda or " potash, or sulphuret of sodium, and other alkaline salts " having an alkaline reaction." In preference, the mineral
 57" glauuberite is employed and is pulverized and mixed

with pulverized charcoal and pure or argillaceous limestone or chalk, and calcined in crucibles or in reverberatory furnaces, &c. until a substance is obtained which the inventor terms "sulpho-sodalite," and which is treated with water until all soluble constituents are dissolved out. The liquor is then concentrated by evaporation to the required strength, when it is ready for use. In applying this menstruum or lye to the cleansing or bleaching of fibrous substances and textile fabrics they are dipped one or more times in a menstruum of the same, at "a temperature ranging from 80° to 200° Fahrenheit, which will usually be sufficient," after which "they may be washed and dried in any convenient manner." "One ton of glauberite dried in the sun or roasted, one ton of vegetable or other charcoal, and one and a half tons of chalk or limestone more or less pure or a little argillaceous" gives "as a result about one and a half tons of solid 'sulpho-sodalite,' from which lyes of greater or less strength are prepared according to requirements."

[Printed, 4d. No Drawings.]

A.D. 1864, June 20.—No. 1525.

SMITH, RICHARD, and SIEBERG, CHRISTIAN.—"Improve-ments in obtaining coloring matter."

Obtaining "violet coloring matters by the action of hydriodic or hydrobromic acid on an alcohol, and on rosaniline or a salt of rosaniline." In one process, 75 parts by weight of rosaniline or salt of rosaniline are mixed with 160 parts by weight of methylated spirit and 160 parts by weight of concentrated hydriodic acid until its boiling point is about 260° Faht., and the whole is heated to a temperature of 250° to 270° Faht., "for about four hours, or until the color is produced," in a closed vessel in preference of iron lined with lead. "In another process chemically equivalent to that herein-before described, but somewhat simplified," mixing "62½ parts by weight of iodine with 200 parts by weight of methylated spirit," and passing into this mixture which is "continuously agitated, a stream of hydrosulphuric acid until a slight excess is apparent." If "the hydrosulphuric acid is too much in excess the addition of a little more iodine will correct it," removing the precipitated sulphur and dissolving in the solution thus obtained, "75 parts by

"weight of hydrochlorate or acetate of rosaniline, the dissolving action being accelerated by a slight heat," and then proceed as in the first process. The product obtained by either process is dissolved in a considerable quantity of methylated spirit and then boiled with "caustic soda, with which last the iodine combines and from which it can easily be recovered." The separated coloring matter is then combined with an acid and dissolved in spirit or water. Bromine may be substituted for iodine.

In the Provisional Specification modifications of these processes are described, and a process is described in which one part of "oxanilide" and three parts acetate of rosaniline are heated to about 400° Fahr. for 10 hours; any red is removed by boiling in acids, which is not claimed.

[Printed, 4d. No Drawings.]

A.D. 1864, June 21.—No. 1540.

MARTIUS, CHARLES ALEXANDER.—(*Provisional protection only.*)—"Improvements in dyeing and printing."

This invention consists in "the production of black, drab, and brown colors upon calico or linen" by "means of phenylenediamine or its salts, and homologues of the same, by first printing or padding on the cloth a above substances, and afterwards exposing them in a moist atmosphere under the influence of ammonia, when black, drab, or brown colors will be produced according to the strength of the solution employed, and the nature of the diamine used. Napthylenediamine may also be employed in the same manner."

[Printed, 4d. No Drawings.]

A.D. 1864, June 28.—No. 1615.

BODMER, LOUIS RUDOLPH.—(*A communication from Charles Brown.*)—(*Provisional protection only.*)—"A new and improved system of washing, cleansing, and drying household linen and other articles, and apparatus connected therewith."

"The general principle governing this new system of washing consists in performing the principal operation under vacuum." It is stated that "the water employed in the various operations ought to be purified or softened by some process, such, for instance, as that known as Lelong

"Burnets." "The apparatus for a laundry capable of washing and cleansing about 100,000 pieces per day may consist of the following":—"4 large water tanks for supplying all the water, placed on the top of the building;" "4 vacuum vats especially adapted for steaming;" "2 vacuum vats especially used for boiling by affusion;" "1 vacuum pan similar to the above, but lined with lead and fitted with lead suction pipe and hot and cold water pipes, but without steam pipe; this vat is placed between two lead cisterns, one for chlorine solutions, and the other for acidulated water; this apparatus is used for bleaching such articles as are too much stained to resist the other processes;" "6 washing machines, in preference of galvanized sheet iron of an oval shape, the bottom of the lower part being bent inwards so as to form at each side a bag-shaped receptacle or corner; the two ends are of cast iron, one being fitted with a cover; this chamber rests upon a hollow oscillating shaft divided into two parts by a partition, one part in connection with the vacuum hot water and cold water pipes and valves is in communication with the upper part of the chamber, and the other with the lower part, which opens into water to prevent admission of air; 2 sets of hand washing tubs, 10 to each set, with two warm water and one cold water rinsing trough to each set of tubs; 8 blueing vats; and 4 hydro-extractors. "The whole of the apparatus are so disposed and grouped as most convenient for performing the several operations in the necessary succession."

[Printed, 4d. No Drawings.]

A.D. 1864, June 28.—No. 1618.

BOUCK, JOHN AUGUSTUS, and HILL, THOMAS.—(*Provisional protection only.*)—"An improved varnish for paper, wood, metals, or other substances, which invention is also applicable to paper and calico printing."

This invention consists in the use of silicate of soda or of potash or other soluble silicate as a varnish. To this is sometimes added "shell-lac and also alum or sulphate of alumina," and also "pigments for the purpose of colouring the varnish," and for the imitation of marble and other substances." It also consists in the use of the above-mentioned varnish for "thickening colours used in printing calico or paper hang-

"ings, or for causing the materials constituting the printed design to adhere."

[Printed, 4d. No Drawings.]

A.D. 1864, July 5.—No. 1669.

PHILLIPS, GEORGE.—(*Provisional protection only.*)—"Improvements in the manufacture of aniline colors."

Treating "aniline and its homologues or salts of the same, for the production of lilac and purple colors" with "protoxide of iron or its salts and arsenic acid," in variable proportions, but a satisfactory result is "obtained by mixing, say, 100 parts of aniline with 200 parts of arsenic acid dissolved in water, and adding to the same 100 parts of protosulphate of iron also dissolved in water." These are intimately combined by digestion and heat until the water driven off leaves a solid mass, which is "subjected to a higher temperature (say from 350° to 400° Fahr.) for about four hours, when a dry mass is obtained from which the colour may be extracted by means of alcohol, or by any other well-known means, and afterwards purified in the ordinary manner." Or 100 parts of aniline red are dissolved in water, and likewise 300 parts of protosulphate of iron, and the two are digested together with heat until a solid mass is obtained, "which is to be subjected to a higher temperature (say, from 350° to 400° Fahr. as above stated) for about four hours, leaving a dry mass from which the colour may be extracted and purified as above-mentioned." "The ordinary arsenic acid and protosulphate of iron of commerce may be employed for the above purposes without the addition of water," although it is preferred to "treat them when in solution as a better result is thereby obtained."

[Printed, 4d. No Drawings.]

A.D. 1864, July 12.—No. 1729.

SCHAD, LUDWIG.—"Improvements in the manufacture of pigments."

These improvements are "in the production and application of a green pigment, the chief constituent of which is mangate of barium." 14 parts of oxide of manganese, 80 parts of nitrate of barium, and 6 parts of sulphate of barium; or 24 parts of nitrate of manganese, 46 parts of nitrate of

“barium, and 30 parts of sulphate of barium.” “Any of these mixtures are heated in a suitable furnace till it has assumed a uniform green color. The green product thus obtained is ground in a mill with water to the required state of fineness. It is essential for the stability of the product to add a certain quantity of gum arabic, dextrine, or other similar substance to the moist pigment.” “In the case of employing gum-arabic,” “an addition of about five per centum” is preferred. “The pigment thus obtained is either dried at a temperature of about 212° Fahrenheit, then powdered and sifted, or it may be used at once in the form of a paste.” It “may be used for staining papers as an oil color, for calico printing, and similar purposes.”

[Printed, 4d. No Drawings.]

A.D. 1864, July 20.—No. 1814.

BARTON, ALFRED, SIDEBOTHAM, JOSEPH, and NEVILL, THOMAS HENRY. — (*Provisional protection only.*)—“Improvements in the treatment of printed or dyed calicos and other fabrics.”

In order to fasten and otherwise improve colours printed or dyed upon goods, “causing water at a high temperature to be forced through the said goods.” To effect this it is proposed “to use two vessels, the one containing the goods, and the other the heated water, which water may be driven through the said goods by steam of adequate pressure; or a force pump or other such mechanical arrangement may be employed.”

[Printed, 4d. No Drawings.]

A.D. 1864, July 25.—No. 1852.

PEYTON, EDWARD.—“Improvements in the manufacture of cylinders or rollers of copper and copper alloy.”

This invention “consists in drawing or rolling a tube of copper or copper alloy conical or tapered, both internally and externally, on an iron mandril, conical on the outside, and that by preference by means of conical grooved rolls or conical dies.” The excess is afterwards turned off from the outside of the copper to constitute a copper cylinder ready for engraving and for other uses.

To force the copper on to the iron, the inventor uses by preference tapering-grooved rollers as described in No. 9187, A.D. 1841, which rollers, whilst revolving in contact with each other, "will at all times present a circular orifice at their "points of contact" "varying in diameter according to their "positions."

The present invention "refers chiefly to cylinders or rollers "used in calico printing" but the invention referred to (No. 9187, Old Law) is not described in connection therewith.

[Printed, 6d. Drawing.]

A.D. 1864, July 26.—No. 1867.

DALZELL, ALLEN.—(*Provisional protection only.*)—"Improve-
ments in the manufacture of coloring matter applicable to
"dyeing and printing."

"The production by means of the iodide and bromide of
"the formyl radical acting on the commercial substance
"known as roseine or magenta, and on roseaniline its base,
"of a certain coloring material, which may be employed for
"the same purposes and in the same manner as the other
"aniline colors are employed." By preference these sub-
stances are employed "in the proportion of one equivalent
"of each, that is, about one part of roseine base to one part
"and a quarter of iodoform, and so proportionally with
"bromoform," then "heat the mixture along with ordinary
"alcohol to a temperature between 212° and 300° Fahrenheit
"in a close vessel under pressure, and continue the heat
"until the desired result is obtained." "When the substances
"are employed in the proportions aforesaid," a violet color
is obtained, but the inventor does not confine himself "to
"these proportions, nor to the use of ordinary alcohol, nor to
"the production of any particular violet color."

[Printed, 4d. No Drawings.]

A.D. 1864, July 27.—No. 1874.

WANOSTROCHT, VINCENT.—(*A communication from Louis
François Chezaud and Henry Jeremie Christen.*)—"Improve-
ments in machinery for printing and perforating paper and
"fabrics, applicable particularly to the production of postage
"stamps, bank notes, bankers' cheques, bills of exchange,
"and similar documents."

For printing paper and fabrics a pressing cylinder is employed; it is heated by steam "into its interior, and its bearings are arranged so as to be able to slide up and down vertically in guides on the frame. Each bearing has a screw attached to it which passes up through a nut fixed at the top of the guides, and has a bevelled wheel fixed to its top. With the bevelled wheels on the screw two bevelled pinions gear; they are fixed on a horizontal axis, of which the bearings are carried by the screws at their upper ends, but so as not to interfere with the rotation of the screws." By turning the horizontal axis with the pinions upon it the pressing cylinder is raised or lowered truly and parallelly. "Around this cylinder an endless apron passes," and the material to be printed "is in a continuous sheet supplied from a roller to the surface of this apron, and just as it comes on to the apron it passes around a guide drum, which in some cases is made hollow and perforated at its periphery, and steam is admitted to its interior." "The printing is effected by three engraved cylinders, each of which applies a different color. The bearings of the axis of the printing cylinders are arranged so that they can slide in guides to and from the axis of the pressing cylinder, and in order to cause the printing cylinders to press with a proper degree of force on the pressing cylinder; each of their bearings has a screw beneath it for setting it up, and a block of india-rubber is interposed between the end of the screw and the bearing to give it sufficient elasticity." Each printing cylinder is furnished with a colour trough, rollers, and doctor or scraper adjustable by screws. Two of the printing cylinders also have their axes supported in eccentric brasses, and each of these is fitted with a screw, by which it can be turned in the bearing. "The centre one of the three printing cylinders is driven from any convenient prime mover by gear of two different speeds, and it drives the other two through intermediate toothed wheels arranged so that the printing cylinders may all revolve in the same direction. The spur wheels of two of the printing cylinders are not keyed on their axes, but a lug on the cylinder enters a slot in connection with the spur wheel, and by a screw the position of the lug in the slot can be adjusted to bring the impressions of the several cylinders to register."

"In order to dry or partially dry the impression of one "printing cylinder" before the material comes to the next, it is made to pass close to the surface of a steam pipe. The material, "when it has received the three impressions, is "carried onwards by the endless apron, and either wound "upon a roller, or taken from the machine." This machine it is said may also be employed for printing and perforating postage stamps and similar labels; and its arrangements for so doing is described.

[Printed, 1s. Drawing.]

A.D. 1864, August 1.—No. 1913.

CARTER, HENRY.—"Improvements in the manufacture of "green colouring matters to be used in dyeing and printing."

These improvements are, "treating aniline, toluidine, or "their analogues with salts of copper or iron (or with a mixture of these salts) and with an acid, and mixing therewith "soluble blue or purple colours or dyes obtained from aniline, "toluidine, or their analogues." In preference the process is conducted as follows:—Take three parts of aniline, &c. heat in a covered vessel at from 180° to 210° Faht., and add a finely powdered salt of copper, preferring the sulphate, until it is resolved into a yellow paste. To this is added from one to one and a half parts of oxalic acid or other mineral or organic acid, for the purpose of keeping up "the color of the blue or purple "dye and to keep the mixture in solution," and then mix in soluble crystals of blue or purple colours or dyes obtained from aniline, &c., "until the desired shade of green required is "obtained, it is then in a thick paste." It is brought to a more solid state by keeping it at or about the above temperature, "which oxidises the aniline, and the color is then "made." It is precipitated "with soda or alkali, which "frees it from its metallic body. It is then purified by repeated washings in alkaline and acidulated solutions, as is "well understood, and is then dried and dissolved out in "methyiated spirit." Instead of acting as above, "the blue "or purple colours may be mixed with the aniline, toluidine, "or their analogues before having the salt of copper or iron "and acid added to them," but the first method is preferred, "as much more even results may thereby be obtained."

Printed, 4d. No Drawings.]

A.D. 1864, August 4.—No. 1949.

PFLUGHAUPT, ADOLPH HERMANN ALVIN.—(*Letters Patent void for want of Final Specification.*)—"Improvements in producing color from aniline."

This invention consist in "the production of rosaniline salts or magenta by the action of the oxygen of atmospheric air at an elevated temperature upon neutral salts of aniline of commerce (and which contain toluidine), such as sulphate, phosphate, hydrochlorate, acetate, oxalate, or other similar salts mixed with a substance which is capable of neutralizing that part of the acid of the aniline salt which is liberated during the transformation of the salt of aniline into the corresponding salt of rosaniline." No free aniline must be disengaged by making the mixture alone. Such substances are, oxides and hydrated oxides of metals, salts of metals with acids of more feeble affinity than the acids of the aniline salts, such as carbonates and acetates, mineral salts of a basic nature, and organic substances of a basic nature, such as the picoline series. To facilitate the oxidation adding "to the mixture of aniline salt with the basic substance neutral substances of such nature as will allow of the diffusion of atmospheric air through the mass, such as pumice stone in powder, gypsum, asbestos, common salt," &c., or the substance added may be "of such a nature as to give off oxygen by heat alone, as peroxide of barium." As an example, and which has been found effective: 1 lb. of carbonate of magnesia, 5 lbs. of dry hydrochlorate of aniline are mixed well together and with about 25 lbs. common salt, and the whole heated in shallow pans or vessels slightly covered from 290° to 310° Faht. till no more red is produced, when it is washed with cold water until the salt is nearly all removed and the colour is boiled out with water. When an insoluble substance has been used as a diluent, "the washing with cold water is unnecessary."

[Printed, 4d. No Drawings.]

A.D. 1864, August 6.—No. 1958.

STOTT, WILLIAM.—(*Provisional protection only.*)—"An improvement in certain woollen fabrics called army cloths."

This invention relates "to that class of woollen fabrics

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“ which have a different colour on each side, and commonly called ‘reversibles,’ and the object is to obtain the two colours and at the same time save the list, which list may be either white or striped. This object is effected by printing either by block rollers or other suitable means, instead of in the usual method of dyeing.”

[Printed, 4d. No Drawings.]

A.D. 1864, August 9.—No. 1981.

CLARK, WILLIAM.—(*A communication from Frédéric Kuhlmann.*)—“ Improvements in the means of producing ornamentation on porcelain, glass, metal, and other surfaces.”

These improvements are, in reference to this subject, “ the production of ornamental designs similar to the frosting of window glass, but varied in arrangement by means of solutions of crystallizable matters applied in thin layers on suitable polished surfaces.” These solutions are used alone, or mixed with amorphous insoluble substances held in suspension, and thickened by gum, dextrine, &c. These designs may be fixed and preserved from water or friction by means of mastic or other varnish or collodion; they may be further fixed by vitrifying them. If metallic salts, as sulphate of copper, had been used in these designs, they may be transformed into sulphurets by exposing them to the vapours of hydrosulphate of ammonia, “ the sulphuret of copper, serving to preserve the crystalline properties of the sulphate.” “ Reproducing copper plates (stereotyped) in aid of photography engraving, and galvanoplastic process.” The original designs are produced on rollers of cast iron or steel, and transferred “ by pressure on two plates or rollers of annealed copper or other soft metal,” so as “ to obtain continuous designs suitable for paper hangings and fabrics.” “ The reproduction of the crystalline designs on sheets of copper by engraving with aqua fortis.”

[Printed, 4d. No Drawings.]

A.D. 1864, August 10.—No. 1988.

ARMISTEAD, HENRY. — “ Improvements in dyeing and sizing or preparing warps for weaving.”

“ Heretofore the dyeing of yarn for warps has been effected either in the hank or chain, and the warping, sizing, dressing

“ and beaming, done afterwards ;” these “ improvements consist in, first, warping, dressing, and beaming, and then subjecting them to the processes of dyeing and sizing in the web, or in passing single ends or threads side by side through the several machines required for one beam or bobbin to another ready for the loom. By this means more level or even dyeing is obtained, and the warps are better sized or prepared for the weaving.” This is effected by introducing any desirable number of boxes or dyeing vessels in betwixt the yarn beams (or the bobbins supplying the yarns) and the sizing box of the ordinary sizing or ‘tape’ machine with suitable appliances and arrangements for driving the whole simultaneously,” and by means of a carrying roller, and a raddle or reed, “ the yarns from the several yarn beams (which may be in any desirable number according to requirement) are caused to enter the dyeing boxes in single ends or threads side by side, passing through the dye liquor (which may be of any usual ingredients, such as are used by dyers),” and by means of arrangements “ for raising and lowering the conducting rollers of the dye vessels, any desirable number of immersions may be given to the yarns in passing through the several dye vessels, according to the particular colour or shade of colour required to be obtained.” “ The yarns then pass through the sizing box and in contact with the brush,” thence over drying cylinders, and being conducted by rollers pass under and over leash rods, and through another raddle or reed to the warp beam ready for removal therefrom to the loom.

[Printed, 1s. 4d. Drawings.]

A.D. 1864, August 10.—No. 1994.

LOWE, CHARLES.—“ Improvements in the manufacture of colouring matters.”

“ The production of brown and red colouring matters,” by the reaction taking place between picric acid and commercial aniline, or a mixture of aniline and toluidine under the influence of heat, which colouring matters may be purified by well-known processes now in use.” In preference, one part by weight of picric acid and three parts of aniline are heated together for several hours in a vessel so arranged that the “ products given off are condensed and allowed to run

“ back into the vessel in which the operation is carried on.”
 “ The re-action takes place at any heat between 212° F. and
 “ the boiling point of the aniline, the time varying with
 “ the heat and quantities of material employed.” For the
 proportions given above in pounds, the heat being 360° Fahr.,
 the reaction will be completed in about five hours. The
 colouring matter is separated, by preference, as follows:—
 The mixture is washed “with benzine, or coal naptha,
 “ which dissolves out the brown dye together with any un-
 “ decomposed aniline or toluidine,” these are distilled off,
 the residue boiled in a solution of “hydrochloric acid of a
 “ strength of 2° Twaddle, to separate the aniline or tolui-
 “ dine,” and the brown residue “when dissolved in an alkali
 “ may be employed for dyeing wool, and other fibres, threads,
 “ and goods.” “The residue, insoluble in benzine or coal
 “ naptha, after being boiled with a saturated solution of
 “ common salt, to separate any undecomposed picrate of
 “ aniline or toluidine, is to be treated with alcohol or acetic
 “ acid, to which it gives up the red dye.” “These latter
 “ solutions may be employed in the ordinary uses of dyeing, or
 “ they may be evaporated to dryness, and the golden residue
 “ thus obtained can be used directly in the dye bath.”

[Printed, *4d.* No Drawings.]

A.D. 1864, August 12.—No. 2012.

BROWN, MATTHEW.—“Improvements in apparatus for wash-
 “ ing and cleansing yarns, woven fabrics, articles of clothing,
 “ and fibrous substances, which apparatus is also applicable
 “ for ‘milling’ woven fabrics.”

First, “the employment of stampers or beaters, having
 “ surfaces nearly the width of the box or receptacle to act
 “ upon a large surface of material at once in contradistinction
 “ to the use of small stampers.”

Second, “the general combination, construction, and ar-
 “ rangement of the apparatus.” “A series of vertical beaters
 “ or stampers, which have arms projecting from them at right
 “ angles, which are acted upon by tappets on a driving shaft,
 “ causing the rise and fall of the beaters.” The fabrics or
 materials “are placed in a waggon or box, having its bottom or
 “ sides perforated and supplied with jets of water at the upper
 “ edges, and this waggon is placed beneath the rising and

“ falling beaters, which by their weight and stamping expel
“ the impure and extraneous matters from the fabrics, all
“ such impurities passing away with the dirty water through
“ the perforations, pure water being constantly supplied from
“ above. The beaters are all arranged to slide in a bar,
“ which can be lifted by a lever, so as to raise all the beaters
“ from the box when its removal is necessary.”

[Printed, 1s. 2d. Drawings.]

A.D. 1864, August 19.—No. 2060.

PARKES, HENRY.—“ Improvements in the manufacture of
“ colours for dyeing, printing, and other uses.”

Treating aniline with chloride of sulphur, in order to obtain
“ a series of colors, comprising among others yellow, red,
“ purple, brown, and black,” proceeding, by preference, as
follows:—100 parts of aniline are placed in a capacious copper
vessel with a condensing apparatus, and from 2 to 10 parts
of chloride of sulphur are added from time to time; “ a very
“ rapid decomposition takes place with the liberation of large
“ volumes of coloured vapours, which are condensed and
“ collected.” When this reaction has terminated, a further
quantity of the chloride of sulphur is added, agitating the
mixture “ from time to time until the desired result is obtained.”
“ When the lighter and brighter shades of colour are desired,”
and to avoid the violent reaction, it is preferred “ to dilute
“ the chloride of sulphur with bisulphide of carbon, mineral
“ naphtha, or other suitable solvent,” and to add such solution
to the aniline and apply “ heat, and continue to boil the said
“ mixture until the desired result is obtained.” The solvent
added is about one-third or half the weight of the chloride
of sulphur. “ The mass resulting from either of these
“ operations is then treated with methylated spirit, or with
“ other suitable solvents, in order to extract the coloring
“ matters, and these solutions may be employed for the
“ purpose of dyeing and printing in the usual manner.”
“ The liquid also with the coloring matter” in the condenser
is agitated with methylated spirit or other solvent, on stand-
ing “ the aniline separates from the spirit, which now holds
“ the spirit in solution.” “ This colored solution is poured
“ off, and when brought to a proper strength is suitable for
“ use.”

In the Provisional Specification, sulphuric and nitric acid and chloride of carbon is also used to act upon the aniline, with iodine and bromine along with the latter, and with chloride of sulphur, and treating the yellowish dye, known commercially as phosphine, with the latter.

[Printed, 4d. No Drawings.]

A.D. 1864, August 23.—No. 2076.

BOGGIO, GERIN GABRIEL.—“A new or improved process for
“ extracting the oil contained in the flour of oleaginous seeds,
“ for distilling, rectifying, and evaporating volatile sub-
“ stances, for preparing volatile oils or essences and extracts
“ for dyeing and medical purposes, for dissicating animal and
“ vegetable alimentary substances, plants, roots, and flowers,
“ and for ventilating.”

This invention consists, in reference to this subject, as follows:—

First, “the extraction of sulphuret from scoured wools.”
“The wool scoured by means of sulphuret of carbon or
“ benzine ” is placed “in boxes or chambers provided
“ with openings in their lower parts;” “these openings
“ communicate with suction valves of pumps or bellows,
“ and the vapours are forced into serpentine or other con-
“ densing apparatus,” “when it is received in a condensed
“ state below the surface of water, which prevents all emana-
“ tions, in an ordinary receiver.”

Second, “to prepare colouring extracts for dyeing, which
“ keep better and keep finer colours, which the heat often
“ partly deteriorates,” employing pumps or bellows to effect
simple evaporation, “the capacity of which varies according
“ to circumstances. This capacity may be as great as 1,000
“ quarts for each of them, only the vapours are thrown
“ out.”

[Printed, 4d. No Drawings.]

A.D. 1864, September 2.—No. 2156.

HUGOUNENQ, JACQUES FULERAND PASCAL.—(*Provisional protection only.*)—“An improved method of obtaining indigo
“ from textile materials, either yarns or fabrics, previously
“ dyed by the blue soaking process.”

“Plunging the textile materials into a tub containing water acidulated with chlorhydric acid as soon as they are taken out of the blue dyeing tub.” After soaking some time, the materials are “squeezed out by hand pressure above the liquid,” and “are plunged into another tub containing also acidulated water; they are again squeezed out, and the water of the second tub is conveyed into the first one.” When the water of this tub “contains enough of coloring stuff it is conveyed to a special receiver, a suitable quantity of chlorhydric acid, say, $\frac{1}{2}$ of a gallon of acid to 20 gallons of the waters, but the proportions are very variable, is then added to saturate the alkaline bases, which saturation will be made evident by its action on testing paper, ‘papier de tourne sol;’ the indigo being then separated from its combinations is precipitated, and after eight or ten hours the liquid can be decanted. The indigo settled at the bottom is gathered and dried by the usual process.”

[Printed, 4d. No Drawings.]

A.D. 1864, September 6.—No. 2181.

PERKIN, WILLIAM HENRY.—“Improvements in preparing coloring matters for dyeing and printing.”

Mixing rosaniline, brominated turpentine or the isomers of that oil, as “caoutchine and the oils of lavender, orange, lemon, burgamot, savin, or sabine, cubebs, and juniper,” and “alcohol, wood, naphtha, or methylated spirit,” and heating them together “in a closed glass or glazed vessel to a temperature of from 140° to 150° Centigrade,” and retaining “it at this temperature for about 8 hours,” in preference proceeding as follows to produce a blue violet:—Mixing together “1 part of brominated turpentine, 1 part of rosaniline, and 6 parts of wood naphtha, methylated spirit or alcohol,” and heating them together, as above. “The vessel is then allowed to cool; it is opened, and the contents, when diluted with methylated spirit or other convenient solvents, is ready for use,” “in the same way as other aniline dyes now well known.” If a redder colour be required, the proportion of rosaniline is increased; if a bluer colour be required, “the proportion of brominated turpentine may be somewhat increased.” After the oil of turpentine the foreign oil of lavender is believed of all the

isomers of turpentine to be most suitable in a commercial point of view for use according to this invention.

In preparing the brominated turpentine it is preferred to proceed as follows:—A Winchester quart is half filled with “water, bromine is added until it covers the bottom about an inch and a half deep, and turpentine is added until one-eighth of an inch thick covers the surface, when the whole is agitated very carefully at first to avoid too violent an action. When all the turpentine is absorbed more is added, and proceed as before, and so go on until all the bromine is combined, as is seen by its ceasing to colour the water. The brominated turpentine sinks to the bottom, is washed with a weak solution of potash and water. It may be otherwise prepared by dropping oil of turpentine into bromine, and washing as above.

[Printed, 4d. No Drawings.]

A.D. 1864, September 14.—No. 2244.

JOHNSON, JOHN HENRY.—(*A communication from Henri François Gaultier de Claubry.*)—“Improvements in the preparation or treatment of coloring matters obtained from aniline.”

“The application and use of the various mucilagenous, gelatinous, saponaceous, and syrupy preparations” afterwards named, or “their equivalents to and in the dissolving or holding in suspension of the coloring matter obtained from aniline and analogous substances, as and for the purpose” of dyeing. The substances used are “starch and other fecula, gelatine, concentrated decoction of the bark or rind known as panama (*guillaya saponaria*), of the rose tribe, the sap-wort of Egypt, the root of the marsh mallow, mucilage prepared from linseed, dextrine soaps, more especially the soap prepared from the oil of sweet almonds, mucilages prepared from plants of the mallow, lily, and orchis tribes, and from lichens, fucus, or sea wreck, and the seeds of the quince,” or any substance which forms mucilaginous, gelatinous, or saponaceous solutions with water. There are other substances which may be employed, although not possessing the above properties, “such, for example, as glucose and glycerine.” After having reduced the colouring matter to a very fine powder a heated and clear decoction of

the substance intended to dissolve the colour is added with stirring and allowed to stand a while, and the clear liquor is decanted off; if some color remains more solvent is added. The solutions thus obtained are used like the alcoholic or other solutions of colour, but are greatly advantageous in not volatilizing. For transporting to a distance they are "evaporated to the consistence of extracts." Alcoholic or methylic solutions of colour may be employed along with the above decoctions.

[Printed, 4d. No Drawings.]

A.D. 1864, September 15.—No. 2251.

WEVER, ALBERT.—(*Partly a communication from Christian Raiser.*)—(*Provisional protection only.*)—"Improved machinery for washing yarns."

"The hanks are hung upon rollers mounted loosely on axles affixed to an endless band, to which a continuous motion is given in a horizontal plane. This band is carried by a pair of tension pulleys set over a tank, through which a stream of water constantly flows. The shafts of the pulleys have their bearings in segment-shaped supports, which rock upon rails fixed on the side of the tank to give a to-and-fro motion to the band of rollers. This motion is obtained through a crank shaft, a connecting rod from which embraces the shaft of one of the pulleys. The connecting rod also carries a click or pawl, which takes into a ratchet wheel on the pulley shaft, and thus imparts at every throw of the crank an axial motion to the pulley, whereby the traverse of the rollers is effected. Upon the rollers which project from either side of the band the hanks are hung," and as the rollers come round and dip the hanks into the tank "a flange or collar of the rollers runs over rails provided to receive them, and by friction of contact an axial motion is imparted to the rollers. Thus the hanks are carried through and slowly rotated in the water, and also have a reciprocating motion imparted to them."

[Printed, 4d. No Drawings.]

A.D. 1864, September 23.—No. 2336.

HENRY, MICHAEL.—(*A communication from Flavie Victorine Augustine Autier.*)—"Improvements in dyeing and tanning and in preparing for dyeing and printing."

The most important features of this invention are as follows :—“in the use of general mordants;” “in mordanting and dyeing all goods in a single bath or liquor, especially in dyeing wool cold without cream of tartar;” “in preparing and dyeing yarns, materials, fabrics, and goods by wood of oak as follows:”—“To remove or preclude the coppery shade which logwood imparts, and to bring out the blue-black tint which lies beneath and is produced by the coloring principle of the logwood, they are finished in a decoction of from 4 to 8 lbs. of one of the mordants of the numerous tannins excepting sumach; the agent preferred is wood of oak, and especially the wood of very old red odorless mountain oak taken from near the soil. A third or fourth part of gall nut may be mixed with it to improve the liquor, though wood of oak is sufficient;” “in employing tannins, and especially tannin of wood of oak, instead of sumach for preventing logwood from giving a coppery tint to threads and yarns;” “in combining the wood of oak with logwood for dyeing black;” “in using wood of oak instead of sumach for fancy and other colors;” “in using alder flowers and fruits instead of dyers’ weed,” and “in using nut-tree leaves,” “for dyeing goods of brown or other colors, alder flowers or fruits may be used instead of dyers’ weed; so also may nut-tree leaves, which indeed act as auxiliaries to or substitutes for cachou (catechu?);” “in using the wood of oak for obtaining new colours,” “in using tannin of the wood of oak for tanning or producing leather;” “in preparing goods for printing, as follows:—silk, bristles, hair, and feathers and wool and the various threads, yarns, and fabrics may be treated by a cold process to prepare them for being dyed and printed, by a cold process by a metallic, alkaline, or other chloride or hydrochloride, as, for example, chloride or hydrochloride of iron will allow of mordanting being dispensed with. Chlorides or hydrochlorides are more energetic when used after the chlorine liquor. These preparing or mordanting agents are used in the same proportions as in ordinary dyeing. Coloring matters obtained by a cold process are preferable to those produced by a warm process.”

[Printed, &c. No Drawings.]

A.D. 1864, September 29.—No. 2400.

BROOMAN, RICHARD ARCHIBALD. — (*A communication from Edouard Hofer Grosjean.*)—"Improvements in printing cylinders or rollers."

"Coating printing cylinders or rollers of an alloy of copper and zinc, and covering the outer surface by the galvanic bath with a coat of copper." "The respective proportions of copper and zinc constituting this alloy are, by preference 55 parts of copper and 45 parts of zinc, but the proportion of copper may vary from 40 to 70 parts, and that of the zinc from 60 to 30 parts." "The rollers may be formed with a cylindrical or conical aperture through their length; and for economizing metal, recesses may be made in the inner surface of the rollers. After being cast the rollers are turned and then covered with the coating of copper, after which they are mounted upon axis of mandrils."

[Printed, 8d. Drawing.]

A.D. 1864, September 30.—No. 2411.

BROOMAN, RICHARD ARCHIBALD. — (*A communication from Alcide François Poirrier.*)—(*Provisional protection only.*)—"Improvements in rendering soluble blue, violet, and red colors in crystals derived from aniline, toluidine, naphthaline, naphthylamine and phenic acid."

Avoiding the use of large quantities of alcohol or the use of sulphuric acid in rendering these colours soluble, by "subjecting them to the action of saponine or bodies or extracts containing saponine," as follows:—take "say, two pounds of blue or violet crystals and on the other hand from two to eight pounds of dry extract of soap-wort (saponaire) (which contains the saponine), and dissolve it in from twelve to twenty pounds of cold water." The crystals in powder are added to this solution and the whole boiled until the product is soluble in water, "which can be tested by putting a small quantity of it into water. The product thus rendered soluble may be used either in a state of carmine (carmin) to which a small quantity of acetic acid is added or in a solid state, and then before using it it must be digested in an equal weight of acetic acid or of water, to which a few drops of alcohol are added." "For red violets, two pounds

" of dry extract of soap-wort (*saponaire*) will suffice, but for
 " green blues, and *lumière* blues, as much as from 7 to 8
 " pounds are required." "The same result is obtained by
 " first dissolving the blue or violet in alcohol, adding extract
 " of soap-wort dissolved in water and boiling until solubility
 " of the product," distilling off the alcohol; or "to the solution
 " of the extract of soap-wort in water" adding "a quantity of
 " alcohol (in this manner the saponine remains soluble, and
 " the gummy matters precipitate). The product is poured
 " upon the solution, and boiling is maintained until solubility."
 [Printed, 4d. No Drawings.]

A.D. 1864, October 3.—No. 2428.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Charles Kestner.*)—"The manufacture of a substitute for albumen."

This substitute is named "mixed albumen" and consists of gluten mixed with albumin or other soluble bodies such as gum. The gluten is prepared by fermenting it "in tepid or cold water of convenient temperature, say from 60° to 80° F.," and stop "the fermentation when the paste of the gluten becomes sticky and before it dissolves in the water," then draw off the water and add to the gluten a solution of carbonate of soda until the mixture is slightly alkaline, then wash in cold water to remove all soluble salts, again ferment it as before, and treat it as before with carbonate of soda, and wash. The gluten is then dissolved in caustic ammonia, the quantity of which varies "according to the quality of the two substances, generally 3½ ozs. (96 grammes) of ammonia will be sufficient for 2½ lbs. (1 kilogram) of gluten," and add to this solution in preference a solution of "pure animal albumen or gum, or a mixture of these two substances," and "dry the mixture into blocks or otherwise as is the practice with albumen." "The best proportions are about one part of dry soluble substance to two parts of dry gluten; some kinds of gluten require more, and other kinds less soluble substance" to render them soluble when dried. The solution "is run upon tinned plates and dried at 60° F. at the highest." "To re-dissolve it take equal quantities in weight of the product, and water, and stir well." "The product may be used as a substitute for albumen as employed in

“ manufactures or otherwise, especially for printing stuffs and
 “ clarifying liquids for photographic purposes; however, the
 “ mixture should be made free from gum.”

[Printed, 4d. No Drawings.]

A.D. 1864, October 7.—No. 2475.

KENYON, THOMAS, the younger.—(*Provisional protection only.*)

—“ Improvements in preparing, fixing, and mordanting cloth
 “ and yarns.”

Combining “ prussiates, phosphates, and all kinds of animal
 “ matter with alumina, stannate, tin solutions, or other suit-
 “ able metals dissolved in alkalies or acids,” or using “ the
 “ animal matter or matters separate if found desirable.” Also
 using “ anatto for bottoming the cloth for indigo and Prussian
 “ blue colors.” The proportions preferred are “ about fifteen
 “ per cent. of animal matter to about twenty-five per cent. of
 “ alumina, stannate, tin solution, or other suitable metals.
 “ The proportions of anatto to be varied according to the
 “ degrees of color.”

[Printed, 4d. No Drawings.]

A.D. 1864, October 12.—No. 2511.

MÖLLER, JOHANNES.—“ Improvements in the preparation or
 “ manufacture of coloring matter for marking ink and other
 “ purposes.”

“ Compounding a preparation or extract of madder root,
 “ such as alizarine, with cyanide of potassium, caustic potash,
 “ or other alkaline salt or alkali,” by which means a material
 is obtained which “ when used for writing, printing, or dyeing
 “ produces a fast color and requires no heat or steam.” In
 order to obtain alizarine, “ boiling it out of madder root or
 “ garancine with spirits, or by boiling commercial green
 “ alizarine with petroleum or extracts therefrom,” and agi-
 tating this solution in petroleum with “ a weak and hot alkaline
 “ solution, caustic soda or caustic potash being preferred for
 “ this purpose.” On standing, “ the petroleum will rise clear
 “ to the top, and may be gently poured off,” and the alkaline
 liquid remains with the alizarine in solution, from which it is
 precipitated by adding a weak solution of sulphuric acid,
 and it is thrown on a filter and washed with cold water. Or
 alizarine suitable for this purpose “ may be drawn out of the

"green alizarine by sublimation" or otherwise. When the alizarine is moist mixing, or when dry grinding, "from $1\frac{1}{2}$ to $2\frac{1}{2}$ drachms of cyanide of potassium or caustic potash, and "from 3 to 5 drachms of alizarine to the fluid pound of color according to the strength required." "This will give a red color," to produce crimson, adding "to the fluid pound of color about four grains of the substance commonly called white bismuth." The marking ink is prepared by adding to the fluid pound of colour prepared as above "from one half to one drachm of carmine or green alizarine free from acid," (preferring the last), "two drachms of alcohol, and two and a half drachms of thin flour paste." The mordant preferred in all cases is " $\frac{1}{2}$ lb. of Roman or Levantine alum in 5 gallons of water," with 1 lb. of common acetic acid. The fabric is wetted with the mordant, and then dried.

[Printed, 4d. No Drawings.]

A.D. 1864, October 13.—No. 2526.

BROOMAN, RICHARD ARCHIBALD. — (*A communication from Arthur Baudesson and Paul Houzeau.*)—"Improvements in the manufacture of prussiates of ammonia, and the application of prussiates of ammonia to dyeing, printing, and to photography."

These improvements are in reference to this subject as follows:—To produce a blue colour upon textile fabrics, 1st, "impregnate the fabric, which should be well bleached and without any dressing, in a bath composed of 100 parts of water and 6 to 10 parts of yellow salt (*sel jaune*) (ferrocyanide of potassium or ammonium?), according to the intensity of tone to be produced;" "2nd, stretch the fabric and leave it to dry in a hot place; 3rd, expose it to light under an ordinary photographic plate until the blue colors which become developed assume a metallic aspect; during sunshine the exposure should be from 15 to 30 minutes, according to the state of the plate; 4th, after exposure wash the fabric carefully and let it remain half an hour in water; 5th, wring it well, and soak it in a bath composed of 1,000 parts of water and 20 parts of sulphuric acid, leave it an hour in this bath, then wash with water; 6th, soak it for about an hour in a bath composed of 1,000 parts of water, 10 parts of hydrochloric acid, and 10 parts of

“ bi-chloride of tin, then wash it in water.” To prepare a
 “ black color, perform the first five operations last above-
 “ described, except that instead of from 6 to 10 per cent. of
 “ yellow salt employ from 3 to 6 per cent. to impregnate the
 “ fabric; then, 1st, dissolve in a quart of water from 30 to
 “ 80 grains of gelatine glue, and add to this solution as much
 “ logwood; 2nd, boil the fabric half or three-quarters of an
 “ hour, then wash with water; 3rd, boil in a bath composed
 “ of 1,000 parts of water and 5 parts of soap until the whites
 “ appear, then wash with water.” To produce a “ violet, the
 “ blue image is discolored in a bath of carbonate of soda,
 “ is dyed with madder, and is brought up by chloride of lime
 “ and soap bath.” To produce a “ bronze, the image is
 “ decolorized as before, is dyed with madder and quercitron,
 “ and is brought up in a bath of soap.” To produce an
 “ olive and brown the image is decolorized, dyed with quer-
 “ citron, and is brought up in a soap bath.” “ By employing
 “ other baths of coloring woods or matters the tints and
 “ colors may be varied.” “ Iron mordants obtained from a
 “ mixture of perchloride of iron and tartaric acid, of double
 “ oxalate of iron and ammonia, and other mixtures which are
 “ capable of taking the same color by dyeing,” have been
 “ deposited on textile fabrics and other suitable substances. In
 “ dyeing for pale blue, the prussiates of ammonia are decom-
 “ posed by vaporization alone without the addition of oxalic
 “ or tartaric acids or ammoniacal salts. “ All the mordants
 “ generally used in the manufacture of printed textile fabrics,
 “ such as mordants of alumina, whereby red, rose, and yellow
 “ tints are obtained,” have been deposited. “ Whatever be
 “ the number of pieces of sensitized fabric exposed at the
 “ same time to the action of light, they may all be submitted
 “ at the same time to the operations above described, thus
 “ 50 or 100 pieces require no more time than one piece.”

[Printed, 4d. No Drawings.]

A.D. 1864, November 8.—No. 2773.

JOHNSON, JOHN HENRY. — (*A communication from Léon Jarosson.*) — “ Improvements in the treatment of yarns or
 “ threads and textile fabrics composed of flax, hemp, or
 “ cotton, and in the apparatus employed therein.”
 - First, “ the system or mode of washing or cleaning yarns

“ and woven fabrics composed of flax, hemp, or cotton without the aid of liquids.”

Second, “ the application and use to, and in the cleansing and bleaching ” of the above substances, “ of a closed vessel or receiver in which the goods to be treated are suspended and subjected to the action of steam under pressure.”

Third, “ the system or mode of treating flax yarns with a view to the removal therefrom of the gummy foreign matter and for preparing them for the subsequent process of weaving into cloth,” as follows:—The thread or textile fabric to be washed and bleached is first impregnated with an alkaline solution, such, for example, as of soda or potash, or caustic soda, of a strength varying from 1 to 5 degrees by the hydrometer according to the nature of the thread or fabric. After draining, the materials are suspended closely together from bars or rollers inside a close vessel with a safety valve, and steam is introduced into the vessel through a perforated pipe underneath a false bottom, the materials being left “ at a pressure of from one to two atmospheres for a period varying from one to two hours.” After which they are “ rinsed, and subjected to the action of chloride of lime and acids, as in the usual mode of treatment.” “ In order to remove the gummy foreign matter from flax, thread, or yarn before weaving it into fabrics, it is simply requisite to subject it to the action of steam for about an hour in the closed vessel, above referred to, when the thread or yarn will be found to be round, brilliant, and firm.”

[Printed, *sd.* Drawing.]

A.D. 1864, November 9.—No. 2785.

DALE, JOHN, CARO, HEINRICH, and MARTIUS, CARL ALEXANDER.—“ Improvements in obtaining colouring matters for dyeing and printing.”

First, “ the production of a colouring matter by the action of nitrous acid or its salts upon nitrate of naphthylamine, or upon other salts of naphthylamine mixed with nitric acid.”

Second, “ the production of a colouring matter by substituting toluidine for naphthylamine ” mentioned in the *first claim*. To a cold aqueous solution of nitrate of naphthyl-

lamine the strength of which is not important, add one equivalent of nitric acid, and dilute this mixture with water until a solution of nitrite of sodium added to a portion of it ceases to produce a precipitate. This solution is afterwards mixed with "an equivalent of nitrite of sodium, or such other quantity," so that "an excess of alkali added to a portion of the liquid will produce a red precipitate which does not turn purple on the addition of muriatic acid. The whole is then slowly heated to about 140° F., when a reaction takes place accompanied by the evolution of gas."

Another method is in "taking a cold aqueous solution of chloride of naphthylamine and adding to it one equivalent of muriatic acid and so much water that nitrite of sodium added to a test portion ceases to produce a precipitate," then adding "a cold solution of one equivalent of nitrite of sodium, or such other quantity of nitrite of sodium as will produce the effect mentioned in the description" of the first process. Two equivalents of nitric acid are then added and "the whole heated as before-mentioned." In either case a yellow colouring matter separates on the surface of the mixture, and when no further formation of the substance takes place "it is collected, washed, and dried. This yellow acid or its salts of ammonia, sodium, &c. are employed for dyeing and printing. By substituting toluidine for naphthylamine in the above process a more orange yellow is obtained."

[Printed, 4d. No Drawings.]

A.D. 1864, November 19.—No. 2894.

WILSON, WILLIAM VIRGO, and WANKLYN, JAMES ALFRED.
—(*Provisional protection only.*)—"Improvements in the preparation of purple dye stuffs."

Preparing these stuffs "of various shades by the action of 'nitrate of methyl' on rosaniline." For this purpose "a mixture of about equal weights of nitrate of methyl and rosaniline and alcohol" are heated together "in a suitable vessel to about 212° Fahrenheit during several hours." Before this operation, it is stated that it has been found "well to add a small quantity of ammonia to the aforesaid mixture," and "by prolonging the heating, bluer shades of colouring matter are produced." "The dye stuffs prepared

“ by the aforesaid process may be purified and used in dyeing
“ and printing in the usual manner.”

[Printed, 4d. No Drawings.]

A.D. 1864, November 22.—No. 2916.

DURAND, JEAN CLAUDE LOUIS.—(*Provisional protection only.*)

—“ Improvements in the manufacture of coloring matter
“ and in treating fabrics and materials dyed or printed
“ therewith.”

First, taking commercial aniline red, (that is to say, a salt of rosaniline) or the different residues produced in the manufacture of aniline red, and heating the same with a large quantity of water to boiling, adding “ little by little zinc in
“ powder or other metal capable of producing hydrogen; the
“ whole is agitated constantly, and in a short time the yellow
“ coloring matter is obtained,” and is filtered and precipitated by “ a solution of common salt. This coloring matter is
“ soluble in water and also in alcohol. It dyes silk and wool
“ an orange yellow. By continuing for a longer or shorter
“ time the process which produces this coloring matter, all
“ shades from reddish yellow (*jaune ponceau*) to greenish
“ yellow may be obtained.”

Second, silk or wool or other textile materials dyed with this colouring matter, and “ then submitted to an oxidizing
“ process, such as the action of sulpho-nitrous acid or of a
“ dilute solution of bichromate of potash and sulphuric acid,
“ the coloring matter becomes converted upon the fibre into a
“ maroon or brown, more or less red, according to the degree
“ of oxidation to which it is submitted.”

[Printed, 4d. No Drawings.]

A.D. 1864, December 3.—No. 3012.

CRAWFORD, JOHN KENNEDY.—“ Improvements in producing
“ ornamental fabrics.”

“ First, the mode of producing ornamental fabrics wherein
“ colored devices produced by printing some of the warps are
“ so modified by figuring with additional warps, or by figuring
“ with special wefts and additional warps combined, as to
“ impart an approximate appearance as though the whole
“ design were produced by weaving,” as follows:—“ The addi-

“ tional warps are placed on one or more beams separately
 “ from the printed warps, and they are actuated by jacquard
 “ cards or tails specially provided for them. The correspond-
 “ ing parts of the jacquard cards are perforated so as to cause
 “ them to appear on the right side of the fabric at the part
 “ where they are required by the design, whilst at those parts
 “ the printed warps are prevented from appearing by the
 “ corresponding part of the cards being suitably cut for that
 “ purpose as will be understood by the practical weaver.”
 “ The design as prepared for the cutting of the jacquard cards
 “ is arranged so that the figuring to be produced by the jac-
 “ quard action with the figuring warps or with both figuring
 “ warps and figuring wefts is worked into the boundary por-
 “ tions of the various colored devices produced by the print-
 “ ing; at the same time such figuring is not in general
 “ confined to such portions.”

Second, “ applying of printed or equivalent devices to the
 “ warps by a stencilling process,” as follows:—“ The warps
 “ are stretched on a suitable surface, and for each color a
 “ plate with the devices in that color cut through it is applied
 “ in contact with them; whilst the color is applied by brushes,
 “ pads, or rollers, so as to color the parts of the warps exposed
 “ by the openings in the plate.”

[Printed, 4d. No Drawings.]

A.D. 1864, December 6.—No. 3045.

HUGHES, EDWARD THOMAS.—(*A communication from August Samuel Leopold Leonhardt.*) — “ Improvements in treating
 “ aniline colours for dyeing and printing.”

“ Rendering of the blue and violet, colours of commerce
 “ obtained from magenta, and which are insoluble in water, in a
 “ fine state of subdivision, so that without further use of alcohol
 “ or other solvent, they are in a fit condition for use in dyeing
 “ and printing, by first dissolving them in alcohol or aniline,
 “ and subsequently allowing the solutions so obtained, under
 “ brisk and constant agitation, to drop into cold water alone,
 “ or into cold water containing in solution neutral salts,
 “ caustic or carbonated alkali, or (as in the last described
 “ process, when aniline is used) into cold water containing
 “ hydrochloric acid,” and subsequently recovering the solvents
 employed; the alcohol “ by any of the known means of dis-

"tillation," and the aniline "by any of the known processes."

The above can also be effected by dissolving the blue and violet colors in "concentrated sulphuric acid of about 66° Baumé, either cold or at a temperature not exceeding 50° Centigrade, so as to avoid the formation of that blue known as Nicholson's soluble blue," which the inventor considers "a disadvantage." "The clear solution thus obtained is then allowed to drop into ten times its weight of cold water, or water containing sufficient alkali to neutralize the sulphuric acid used under the same precautions as those specified above."

No mention is made of this last mode of treating the colours in the Provisional Specification. In each case the precipitates are separated from the clear liquid by filters, or by "a centrifugal drainer, and after washing, are ready for use" The proportions in which it is preferred to use the various solvents and diluents are given.

[Printed, 4d. No Drawings.]

A.D. 1864, December 14.—No. 3093.

HANCOCK, CHARLES, and SILVER, STEPHEN WILLIAM. —
"Improvements in colour printing."

"The application of the milk of ballata or the milk of caoutchouc alone or in combination with each other, and other substances for the purpose of colour printing," as follows:—
"Inconvenience has arisen in the use of caoutchouc for calico printing, in consequence partly of the offensive smell, and partly of the inflammable nature of the solvents used to render it sufficiently liquid for printing purposes," but the milks of ballata and of caoutchouc "requiring no solvents to render them fluid may be employed with advantage in color printing." If the milk as imported is too thick, it is reduced to a suitable consistence by the addition of water.
"The milk of ballata or caoutchouc, either alone or mixed, when strained through sieves or cloth, or other suitable strainers, is mixed with the desired dye or pigment," ground very fine, in water alone, or in paste, size, or gum.
"When concentrated dyes are used, such as ground logwood, phosphine, roseine, magenta, indigo, &c., &c.," they are *diluted* "with water to the required tone of color," and mixed

with the milk ready for use. "The mode of applying coloring matter to printing rollers, and to blocks for printing, the process of 'tearing,' &c., is well understood by persons conversant with this branch of manufacture." Owing to the rapidity with which these milks coagulate, "care should be taken to have brushes, 'tearing' sieves, and cloths, printing blocks, &c." well washed when out of use, before it becomes hard.

[Printed, 4d. No Drawings.]

A.D. 1864, December 16.—No. 3115.

BARDWELL, WILLIAM.—"An improved method of utilizing sewage and urine, and for facilitating their passage through pipes, thereby preventing the pollution of rivers and streams."

This invention is, in reference to this subject, as follows:—"Over each basin, or bowl, or tank," in which the urine or other sewage matter has been collected from which the manure is to be made, "is a cone, in which are hung baskets, containing oxide of manganese, coke moistened with diluted muriatic acid, or sawdust moistened with diluted sulphuric acid, to absorb and crystallize the evolved ammonia for utilization. The urine is received into a tank either beneath or on one side of the public urinals and taken from thence to a laboratory, where it is treated according to its dilution with a sufficient quantity of sulphuric acid or other mineral acids to fix the ammonia; it may then be evaporated to any required strength, and the acids neutralized and be used for dyeing or other purposes, or converted in a dry and friable compound by the admixture of sulphate of lime, and added to the sewage deposit, or sold separately."

[Printed, 1s. Drawings.]

A.D. 1864, December 28.—No. 3226.

HOLMS, WILLIAM.—(*Provisional protection only*).—"Improvements in the mode of treating warp yarns used for weaving, and in the machinery or apparatus connected therewith."

"The warp or yarn is placed on a beam or beams, and at one process it is dyed and dressed and stiffened, or should it not require to be dressed or stiffened, the dyeing process is

"effected alone. These operations are capable of being carried out in several ways."

According to one modification, the beam or beams upon which the warp yarns are wound previous to being dressed are placed some little way from the trough containing the dressing or stiffening material; between these beams and the dressing machine is a framework carrying vats containing the colour for dyeing the threads; in the dye vats are one or more carrying rollers, over or under which the threads of the warp pass as they are wound on to the weaver's beam; passing from the dye vat or vats, the threads pass over heated cylinders, or heated currents are impelled against them by fanners, and after being dried, they pass through the trough containing the stiffening or dressing solution, the remaining part of the process being similar to that used in the ordinary dressing machine."

Another modification is "mixing the dyeing mixture and the dressing or stiffening mixture together in the dye vat or vats; after the threads have passed through this they are dried."

Under another modification "the colouring matter is printed on to the warp yarn either by blocks or rollers in lieu of causing the yarn to pass through the dye vat or vats."

Employing a bleaching solution in lieu of the colour, as herein-before described, placed in the "dye vats in substitution of the colour, thereby bleaching the threads or yarns as they are passed through it."

[Printed, *4d.* No Drawings.]

1865.

A.D. 1865, January 26.—No. 227.

RIPLEY, HENRY WILLIAM. — (*Provisional protection only.*)—

"Improvements in coloring kempy wool and hair."

"Applying color to such 'kemps' or 'kempy' wool and hair by printing them all over or solid when in a state of sliver or fleece, and then setting or fixing the color by steaming the sliver or fleece in like manner to that in which

“ printed yarns are steamed. The wool or hair before printing is usually subjected to the process of stoving with sulphur. The most convenient manner of printing a sliver of ‘kemps’ or kempy wool or hair is by rollers covered with cloth so as to apply the color to all parts as evenly as possible, though other forms of printing surfaces may be employed; it is, however, preferred to use machinery such as is described in No. 913, A.D. 1863.

[Printed, 4d. No Drawings.]

A.D. 1865, January 28.—No. 249.

BURQ, VICTOR.—“Improvements in filtering apparatus.”

First, “filtration in the cold or in the heated state on a large or on a small scale of water, wine, beer, vinegar, aqueous salts of indigo,” “decoctions of log or other dyeing woods, tinctural or other suitable liquids or semi-liquids,” &c. “by means of thin blades, plates, slabs, diaphragms, or other similar mediums constructed of either natural or artificial suitable porous stone or suitable porous filtering compounds,” properly cemented and fixed to resist the pressure of the liquid to be filtered, and allowing the filtration to take place from either side or surface of them. Cleansing the filter by “causing filtration to take place for some time in an opposite direction;” cleansing brushes may also be employed and “the current of the water in which the apparatus” is immersed is taken advantage of for “cleansing their surfaces.”

For manufacturing the diaphragms, using “porcelain or other suitable clay or ceramic mass” into which is mixed “wood-dust powdered wood, or animal charcoal, peat, or other suitable minutely divided combustible matters, the quantity and nature of which depends on the degree of porosity to be given to the said artificial porous slabs,” &c., after which they are baked or fired. When these slabs are required. “not only as a filtering but also as a disinfecting medium,” “they may be formed of suitable carbonaceous matters, such, for instance, as finely-pulverized bituminous coal, coke, breeze, wood, or animal charcoal, to be thoroughly mixed with tar, clay, or other suitable agglomerating material,” and moulded, and baked in air-tight vessels.

Second. Several methods of filtering large bodies of water by the above means.

Third. The general arrangement of apparatus "presenting" in a very small compass a large amount of filtering surface." The liquid filtered may be suitably disinfected and cooled by the apparatus which may be kept floating or immersed in the upper or purer portions of the liquid to be filtered.

Fourth. The apparatus for "filtering, straining, draining, or drying semi-liquids," "paper pulp, ceramic slips or paps, or others of a similar nature."

[Printed, 1s. 6d. Drawings.]

A.D. 1865, February 22.—No. 490.

MALLISON, JAMES. — (*Provisional protection only.*) — A "method of treating yarns or threads previously to the processes of dyeing and dressing."

This invention "is designed for the purpose of preparing yarns or threads so as to render them fit for use in that description of machines" described in No. 576, A.D. 1856, and "in similar machines which have not hitherto been quite successful from the want of such method of treating the yarn." This "method relates to the mordanting of the yarns or threads, and consists in passing the yarns or threads from the 'warper's beam' (that is in a wide or laterally distended state) through a trough or troughs containing any suitable mordant, such as sumach, catechu, or other suitable substance containing tannin, and so on to another beam, or from a series of beams on to a corresponding number of beams (or from bobbins on to a beam); after passing through squeezing rollers they may be allowed to remain in a partially wet state to absorb as much of the remaining mordant as possible, or they may be passed very slowly through the mordant troughs to ensure thorough saturation. The yarns or threads having been thus mordanted in the 'warper's beam' state, are then ready (without warping or winding) to be dyed, sized, and dressed in any machine which effects the process simultaneously, or if preferred, in separate machines."

[Printed, 4d. No Drawings.]

A.D. 1865, February 25.—No. 538.

FONTAINEMOREAU, PETER ARMAND, le Comte de. — (A communication from Jules Pernod.)—"Improvements in the treatment of madder and the products obtained therefrom."

"Extracting the coloring matter from madder" as follows:—The water used throughout this process must be very pure, and "should contain no particles whatever of calcareous salts." The roots are thoroughly washed with water and placed under a mill stone or wooden crushers, avoiding "calcareous stones, iron, or brass;" a "small quantity of water is added, and with this additional precaution the produce is a very fluid pulp." "The whole is strongly stirred" in a vessel, and "afterwards poured in a wooden frame the bottom of which is lined with wire gauze, the meshes of which must be sufficiently close to retain all the woody parts or fibres of the roots, whilst, at the same time all the coloring principle can run into a wooden vat with the water contained in the pulp," and the residue washed several times, the last washings being with boiling water. To the whole of the liquids connected together, in preference chloride of calcium is added, in such quantity as to "precipitate all the coloring principle therein contained." "Sulphuric or chloric acid" may be used instead of chloride of calcium, "especially if the operations for obtaining the said coloring principle have in view the manufacture of alizarine."

Any substance "forming with the coloring principle an insoluble compound can be usefully employed for precipitating." The liquid is drawn off, and the coloring substance laid on a cloth and drained, "if it is not to be employed directly in the neighbourhood, or if not to serve for manufacturing alizarine it is strongly pressed, placed in a stove, and finally reduced to powder."

[Printed, 4d. No Drawings.]

A.D. 1865, March 4.—No. 617.

AKERROYD, ABRAHAM. — "An improved process and apparatus for dyeing and preparing cotton, worsted, and silk warps."

This process consists in dyeing the warp, in lengths instead of all at once. "To the periphery of a wooden roller provided with an iron axis running on a suitable framework (and placed in the front of an ordinary warp dressing apparatus)," pegs are attached "at such distances from each other as the pattern required may necessitate." Over these pegs are passed "to the receiving warp beam such ends of the warp as do not require to be dyed, or which require dyeing another colour than those contiguous to them. The remaining ends of the warp to be dyed are passed on to an ordinary beam, and the dye liquor required being placed in suitable vessels underneath the same by means of a winch upon the end of the axis." Those threads are raised up "in contact with the pegs which do not require dyeing, or which require dyeing a different colour," tying the same together, "lowering the roller by an ordinary mechanical appliance in order that the ends to be dyed may be conveniently dipped. The stick used in dressing is now passed through the warp and run up to the extremity of the length to be dyed. An ordinary slay is then introduced for the purpose of separating the threads more effectually. The threads to be dyed are now dipped in the liquor placed underneath to such length as may be required, the 'stop' being made by tying the threads together," &c. "The length so dyed may now be passed, together with those threads passing over the pegs it (which is not requisite to dye), on to the warp beam and dressed in the usual manner. Another length may be dyed any other desired colour, and so on to the end of the warp." "When it is desired to dye the threads passed over the pegs, those already dyed may be passed over other pegs, and raised in the manner before described," "By another method a grey warp, for instance, may be tied or threaded into a slay, and 'males' similar to 'harness' used, so that each end of the warp is independent; then, by means of 'card' roller the ends may be lifted which it is not desired to dye." Instead of the wooden roller having a pegged periphery, as first described, "the warp may be passed through an ordinary slay, and the ends which require dyeing may be tied by the fingers ready for dipping by hand." By this plan, considered

“ more useful than the mechanical appliances before named,
“ a manufacturer has simply to tie up the warp in the rough
“ in such lengths and in such proportions as the pattern
“ required may necessitate.”

[Printed, 4d. No Drawings.]

A.D. 1865, March 13.—No. 705.

WISE, FRANCIS.—(*A communication from Ivan Levinstein.*)—

“ Improvements in preparing certain colouring matters for
“ dyeing and printing.”

Heating together one part by weight of rosaniline with one part of formic acid, and, by preference, half a part of acetate of soda (the addition of this substance is not necessary), to a temperature of from 356° to 392° Faht.; when the mixture appears dark brown, it is “dissolved in wood spirit or alcohol, “ a scarlet red color is shown; or if instead of interrupting “ the operation when the mixture appears dark brown,” the application of the heat be continued until the temperature has reached, say, 496° Faht., and dissolving as above, “a red “ orange colour will appear.” If the mixture be heated to about 510° Faht., and dissolved as above, a yellow orange colour is shown. In order to prepare a “beautiful brown “ colouring matter,” when the matter has become scarlet red, it is mixed conveniently with 3 parts of “aniline oil” to one of scarlet red colouring matter, and the whole be heated between 356° and 410° Faht. “The excess of aniline oil may “ be separated by any of the known processes.” To obtain violet colouring matter, mixing in preference one part of rosaniline with one part of valerianic acid and heating “the “ same until the mixture begins to thicken and attains a temperature varying with the tint required, the mixture becoming “ more blue the longer the heat is continued until blue violet is “ obtained,” allowing the mixture to cool, then boiling it in water, “ after which, on being properly cooled, it is ready for “ use.” “Stearic acid, or butyric acid, or acetic acid, or “ olnanthylic acid, as well as several other acids of the same “ group, may be substituted” for valerianic acid, but the latter is preferred.

None of these acids, substitutes for valerianic acid, are named in the Provisional Specification.

[Printed, 4d. No Drawings.]

A.D. 1865, March 14.—No. 718.

GANTERT, LONGIN.—“Improvements in machinery or apparatus to be employed in the bleaching or dyeing of hanks or skeins of yarns and threads.”

There are two machines:—“No. 1 consists of an annular shaped trough in combination with a series of radial horizontal revolving arms working above the trough. The arms are carried by the upper one of two discs placed on a vertical shaft one above the other. The upper disc works loosely round the shaft and the lower one is fast thereon and moves with it. A roller is carried on the outer end of each arm, which serves as the axis thereof, and the several rollers revolve immediately over the annular trough and travel in contact with the surface of the lower disc,” which has a partial circulating reciprocating motion by means of a connecting rod and crank, and the upper disc has “a circular reciprocating motion and slow circular advancing motion round the centre shaft. The hanks or skeins to be operated upon are hung upon the rollers, and their lower ends dip into the water or liquor in the trough whilst a rotatory motion is imparted to the several rollers, and consequently the hanks or skeins will vary their position so as to admit of their entire surface being subjected to the action of the water or liquor in the trough travelling in a contrary direction. When hanks or skeins are to be dyed Turkey red, they are in preference washed in No. 2 machine, which is also capable of wringing them;” they are then to be impregnated with oil and alkali liquors in No. 2 machine, and afterwards transferred to No. 1 machine for the purpose of washing the same and for impregnating them with gall and alum liquors, and if desired, for dyeing, washing, &c. No. 2 machine consists of two parallel horizontal rollers revolving in a trough upon which the yarn is placed. The trough after operations is lowered by a self-acting lever, &c.

[Printed, 10*d*. Drawing.]

A.D. 1865, March 14.—No. 721.

BAGGS, ISHAM.—(*Provisional protection only*).—“Improvements in colour printing and in apparatus connected therewith.”

Employing as many separate presses "as there are colours to be printed, such presses being similar or analogous to the ordinary hand presses, and arranged either horizontally or vertically, the whole being actuated by a single horizontal shaft" or otherwise, and "to which any suitable motive power may be applied." The material to be printed is placed upon a series of iron or steel plates secured at equal distances from each other. The distances between the plates are the same as the distances between the presses. Stout iron plates are placed under the several platens and plates. Or in place of this, the surfaces on which the substance is laid may be arranged so as to form a regular polygon, which may work either horizontally or vertically. In this arrangement tapes are provided in the well-known manner." Instead of either of these arrangements a flat revolving table may be used or any analogous contrivance." Set screws are used for adjusting the surface blocks in register, and where plates are employed, register pins slip into "corresponding holes by means of the taper or conical ends with which they are furnished." Hydraulic pressure may be employed for making the whole stroke or for the finish of the stroke only. "When different colours are required to be laid on each other, then, after the first set of colours is printed, the colours are dried and the sheets or roll passed through another apparatus arranged similarly to that before described, where the second set of colours is laid on or printed, and so on if more are required."

[Printed, 42. No Drawings.]

A.D. 1865, March 18.—No. 762.

KENYON, THOMAS, the younger.—"Improvements in preparing, fixing, and mordanting cloth and yarns."

Combining "prussiates, phosphates, and all kinds of animal matter with alumina, stannate, tin solutions, or other suitable metals dissolved in alkalies or acids; or the animal matter or matters are used separately if found desirable. The proportions preferred "are about fifteen per cent. of prussiates, phosphates, and animal matter to about twenty-five per cent. of the alumina, stannates, tin solution, or other suitable metals."

[Printed, 42. No Drawings.]

A.D. 1865, March 22.—No. 804.

PARAF, ALFRED.—“Improvements in dyeing and printing
“cotton or linen fabrics or yarns.”

“The producing an aniline black upon fabrics or yarns by
“the action of chloric acid and free chlorine upon aniline or
“its homologues or any mixture of the same,” as follows:—
The cloth, &c. is impregnated or prepared “with a mixture of
“about half an ounce of arsenious acid, five ounces of chlorate
“of potash, and one gallon of boiling water,” dried without
washing, and then printed, dyed, or padded with the mixture,
“of about two pounds black liquor to one gallon of thicken-
“ing. The black liquor consists of one part of muriate aniline
“ (very acid) and one part of hydro-fluo-silicic acid at eleven
“degrees Twaddell, and boil until it is dissolved.” After
printing or dyeing, the goods are aged “in a damp room at
“about 90° or 95° heat till a very dark olive green shade
“appears, and then by passing the goods through any alkaline
“solution, or soap and water, the required black is produced.”
“In using the chlorate of potash in the color, the cloth or
“yarn does not require any preparing process,” but using
“for one gallon of color two pounds black liquor to one pound
“of chlorate of potash.”

Another modification is using fluo-silicate of aniline in
crystals for printing upon or mixing “with a mixture of
“chlorate and chloride of potash.”

Another modified process is by the action of chlorate of
aniline upon free chlorine; the chlorate of aniline is prepared
by decomposing fluo-silicate of aniline with chlorate of potash
in excess. The cloth, &c. is prepared in a mixture of chlo-
ride of magnesium and bisulphate of potash, and the chlorate
of aniline printed upon it. The goods in each case are aged.

In the Provisional Specification the cloth is impregnated
with a solution of chlorate of potash, and printed, &c. with a
solution of chlorate of aniline and hydro-fluo-silicic acid and
aged, and none of the other processes are given.

[Printed, 4d. No Drawings.]

A.D. 1865, March 22.—No. 807.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from
Narcisse Guilbot and Pierre Heritier.*)—(*Provisional protection
only.*)—“Improvements in engraving on metal.”

Producing "on metal plates or rollers (copper, steel, or zinc) engravings in intaglio, or in relief of objects photographed or drawn by hand, in one or several colors for printing on fabrics, leather, and other substances," as follows:—

First, engraving in relief; the object (flowers, fruit, animals, &c.) is drawn or produced by photography. If there be several colours, each colour is picked or bitten and transferred to as many stones as there are colours. Impressions are struck off on paper; these impressions are transferred to metal by lithography, varnished with engravers' varnish, or inked by means of a roller with lithographic ink thickened by tallow and wax to preserve all the parts which are to remain in relief." An impression is taken on metal, with Judea powder or resin, and the plate is placed "in a nitric acid bath of from 15° to 20° Beaumé;" or submitted to the action of a galvanic pile." After a biting of about 20 minutes, the plate is heated or again inked to protect the feeble parts, and the operation of biting by acid or pile is continued until the engraving is effected.

Second. Engraving in intaglio; by drawing "on stone with an ink composed of gum, China ink, and acid," covering the stone with autographic or lithographic ink, and after the ordinary lithographic preparations, a design in white, that is say a negative" is obtained, which is transferred to metal, and the engraving effected by the acid bath or pile as before described. "A design may be changed from black to white by striking off an impression on paper, the design is covered with pulverized gum arabic, transferred to stone covered with lithographic ink, and washed, and the change from black to white thereby effected."

Third. "Engraving in intaglio by reserve of lace openwork designs and others;" the design is transferred directly or indirectly by photography, lithography, or otherwise, the metal plate is then covered with a composition consisting of the following substances:—Gum arabic, 5 parts; Narbonne honey, 5 parts; natural garlic essence, 2 parts; distilled water, 5 parts; and 2 parts both of fine starch and of albumin, these are ground to a paste and spread in regular layers on a metal plate, and the piece of lace, &c. is pressed upon this in order that it may take up some of the composition, and the

lace is removed to a second metal plate or roller, and pressure effects the transfer as in lithography, it is then blackened by means of a lithographic roller, and placed in a bath of rain water, 100 quarts; nitric acid, 1 quart; and of sulphuric acid, $\frac{1}{2}$ quart; and alcohol, $\frac{1}{4}$ quart; and by producing the galvanic action, the design is engraved in intaglio, from which copies are reproduced or produced on textile fabrics, &c., by a hand plate or roller.

Fourth. "Negative impression."—The design is drawn on a lithographic stone with pencil or pen in lithographic ink, the stone is inked by means of a roller with the following composition mixed to a paste:—5 parts of China ink and of gum, 10 parts of honey and of ordinary black, 2 parts garlic, and red chalk (sanguine) in suitable quantity; an impression is taken and transferred to a prepared stone, it is covered with mineral powder, the stone is inked by a roller with lithographic black, and the stone is fixed and prepared in the ordinary manner, and the design appears in white, that is to say a negative, an impression is taken from it and transferred "to metal in the manner previously described for producing an engraving in intaglio."

Fifth, "Reproduction of old engravings" "on stone or metal, by known processes of photography and heliography," which is applied "to printing on stuffs, by the known means of bichromate of potass or Judea bitumen prepared in darkness with water and gum," &c.

[Printed, 4d. No Drawings.]

A.D. 1865, March 28.—No. 870.

MILLAR, JAMES, and LAING, JOHN.—"Improvements relating to apparatus for printing ornamental fabrics."

These improvements relate "to the printing of ornamental fabrics by two or more continuous pattern rollers, but in such a way as to leave blank spaces to be subsequently filled up by borders or other different patterns." Hitherto this has been done by "fixing pieces of paper on the respective parts of the fabric before beaming it for the printing machine," but the inventors use "pieces of sheet zinc or other suitable metal or material," these "being introduced as the printing goes on, and being set to marks previously put on the fabric." "This process presents no difficulty in printing

“ with a single roller, and in that application there is no
 “ novelty, but in printing with two or more rollers, the plate
 “ or sheet tends to bend away from the fabric immediately
 “ on leaving the first roller, and to fall away entirely if it is
 “ not wider than the space between the nips of the two
 “ rollers,” but this is prevented by “applying guides between
 “ every two printing rollers, such guides keeping the plates
 “ or sheets, however narrow they may be, in contact with the
 “ fabric on the large central cylinder during its passage from
 “ one printing roller to the other.” There is a set of guides
 between each pair of rollers, and each set is adjusted upon a
 spindle fixed by brackets, at its end of the framing. The
 guides in preference are narrow brass bars, shaped concavely
 on their inner faces to suit the convexity of the central cylinder,
 and with bosses at the back for fixing them on their spindle.
 The ends of the spindle are squared, and are fixed each at a
 block, which can be adjusted by a screw in its holding bracket.
 The number of the guides on each spindle may be varied, but
 four are found to answer well in ordinary cases. Two or more
 rollers are set loosely on spindles between the guides. The
 brackets carrying the guide spindles are fixed to the framing
 or to the sliding blocks which carry the printing rollers.

[Printed, 8d. Drawing.]

A.D. 1865, April 8.—No. 1006.

ISHERWOOD, JAMES.—(*Provisional protection only.*)—“ Improvements in dyeing or printing upon the fabric known as ‘sail cloth.’ ”

First, “submitting the fabric to a solution of caustic alkali
 “ until the greasy matter is removed,” after which it is freed
 “ from alkali by washing, and then it is to be submitted to
 “ the action of chlorine gas or other similar agent, which
 “ renders the surface in a fit state to receive a mordant such
 “ as sumach, with which it is to be saturated by steeping in a
 “ suitable vessel. When in this state it is to be printed upon
 “ in designs by means of blocks or cylinders, and afterwards
 “ dried, and if required pressed between hot rollers, which
 “ produces a glazed and polished surface, and the fabric
 “ so treated may be used as carpeting or druggeting, or
 “ previously to mordanting the surfaces may be covered

"with a composition of oil and body color, which is to be smoothed by rollers, and then printed upon in oil colors by means of blocks or cylinders."

[Printed, 4d. No Drawings.]

A.D. 1865, April 8.—No. 1010.

DEBNAM, JOSEPH.—(*Provisional protection only.*)—"Improvements in the means of ornamenting linen cuffs and collars."

These improvements are, in place of using printed designs cut from a piece and applied by sewing or otherwise to the linen collar, "printing the designs at once on the collar by the application of lithography." Any kind of a design is produced on a printing stone, from which is printed "in an ordinary lithographic press, using for the purpose the same coloring matters and mordants as are now used in printing similar designs for application to cuffs and collars as aforesaid," on "all the fabrics used for what are termed linen cuffs and collars, that is to say, on linen, cambric, lawn, and cotton goods. Some cuffs and collars instead of being sewn or stitched around the edge as usual, may be pasted or otherwise secured on to a foundation of paper or other material, and stabbed in imitation of stitching, as well understood in paper collars;" but it is preferred to sew and stitch on a linen foundation as at present adopted in the best goods.

[Printed, 4d. No Drawings.]

A.D. 1865, April 20.—No. 1098.

SMITH, ERNEST, and SIEBERG, CHRISTIAN.—(*Provisional protection only.*)—"Improvements in obtaining violet coloring matters."

"Dissolving one part by weight of rosaniline, or of a salt of rosaniline, in a mixture of about two parts by weight of alcohol or methylated spirit, and about two parts weight of iodide of the radicle of acetone, and heating the whole in a closed vessel to from 212° to 250° F. for four or five hours. The color is a bluer shade the longer the heating is continued. The iodide of the radicle of common acetone, such as is obtained from acetate of lime is preferred;

" but iodides of other radicles of the acetone series will also answer. Bromides of the same radicles may also be used instead of iodides."

[Printed, 42. No Drawings.]

A.D. 1865, April 24.—No. 1144.

CLARK, WILLIAM.—(*A communication from Messieurs Neyret, Orioli and Fredet.*)—"Improvements in washing or steeping, and bleaching textile or fibrous materials."

Using ammoniacal water for the above purpose as follows :—Two distinct apparatus are employed ; the first consists " of a closed steeping apparatus, properly so called, which may be either fixed or made to rotate, and furnished with an agitator or stirrer in its interior, the apparatus being heated either by a furnace or by the admission of steam at a suitable pressure."

"The second apparatus consists of a condenser, which is hermetically closed and placed in communication with the steeping apparatus by means of a cock ; when the steeping operation is terminated, the condenser being cooled at the same time," the ammonia is collected, the water is run off from the second vessel, and "the washing process proceeded with as ordinary. The ammoniacal water in the condenser is then supplied with a little fresh ammonia to compensate for the slight waste which is inevitable, and may then serve again for a similar purpose." This process may "be employed with advantage for bleaching generally, as in paper making, all kinds of dyeing in bleach works, and for domestic washing purposes ; in the latter case, and for fabrics generally, a pressure of about two atmospheres is sufficient, the stirring being unnecessary." "The apparatus may be heated in an open fire, taking the precaution to place a vessel concentrically in the interior of the apparatus. This vessel is pierced with holes," the fabrics are placed in it. After steeping, the use of soap is unnecessary, "it being sufficient to rinse the linen or other fabrics in pure water."

[Printed, 42. No Drawings.]

A.D. 1865, April 25.—No. 1155.

WILKINSON, JOHN, the younger.—"Improved means or apparatus for printing felts, floorcloths, carpets, and woven fabrics."

"Printing felted and other materials" named above "at one operation," either by the following machinery, or by any other mechanical equivalent, the words 'carpets and woven fabrics' in the "title applying solely to felted carpets and woven druggets." "It is at present customary to print felted goods manually," and to obviate this there is upon a suitable framework mounted at "convenient distances a series of cylindrical pattern rollers cut to the pattern it may be desired to impress (each pattern being filled with woollen cloth or other suitable absorbent) upon the felts, floorcloths, carpets, or woven fabrics." Underneath these rollers are placed "cylinders free to revolve in bearings secured to the frame, and at such distance from the pattern rollers as will allow the material to be printed to pass between them, and at the same time to receive the impression of the pattern rollers, which are supplied with colouring matters from feed rollers covered with suitable material, such as woollen cloth, such feed rollers being each one of a series of three similarly covered, and in contact with each other, the last rollers of the series revolving in troughs furnished with the requisite colouring matters." Within the frames at either side, and extending from end to end of the same are placed "endless chains of the well-known construction furnished with tenter pins, and on either side of the machine at the front end where the cloth is fed, and also at the back end," a wood roller is placed, "furnished with an india-rubber or elastic ring over the line of transverse of the tenter pins."

[Printed, 10d. Drawing.]

A.D. 1865, April 26.—No. 1169.

BROOMAN, RICHARD ARCHIBALD. — (*A communication from Stanislas Vigoureux.*)—(*Provisional protection only.*)—"A new or improved method of conditioning or preparing fibres, threads, and fabrics, and apparatus to be employed therein."

This invention "consists in conditioning or preparing filamentous substances by impregnating them, preparatory to or during or after the ordinary manipulations they undergo, with air moistened by being forced through or over a pure liquid, or a liquid containing any desired chemical agent or principle."

“The invention also consists of an apparatus in which the air is moistened and applied. This apparatus consists of a tank or chamber containing in the lower part a simple or compound liquid; the tank is closed at bottom, except to a pipe leading from an air pump; plates extend across the tank with perforations at alternate ends to cause the air to travel in a zig-zag direction and through a large extent of the liquid. At some distance above the level of the liquid is an openwork tray for supporting the filamentous substance to be moistened; the tank is closed at its sides and top, and is provided with doors to allow of the substances being placed upon and withdrawn from the tray, and pipes fitted with stop-cocks are attached to allow of the escape of air as may be required, or to lead the moistened air to be applied in other vessels.”

[Printed, 4d. No Drawings.]

A.D. 1865, April 29.—No. 1193.

FERRIE, ROBERT, MURRAY, JOHN, and WILSON, ADAM.—“Improvements in dyeing yarns.”

Dyeing “woollen worsted, indian, wincey, mohair, alpaca, silk, cotton, flax, linen, jute, and other yarns in an improved manner, and more uniformly than hitherto.” The invention consists in stretching the yarns in the hank form whilst subjecting them to the dyeing “liquor.” In practice “the hanks may be stretched in any convenient way,” but by the mode described the hanks are arranged on rods which are fitted into sockets in a frame “which can then be lowered into the dyeing vat or vessel, and be turned or otherwise worked therein if the dye requires it.” “The reel is made of a size suitable for stretching the hanks, different reels being used for different sizes of hanks, or one reel may be constructed so that the cross bars can be adjusted more or less asunder by means of screws.”

[Printed, 8d. Drawing.]

A.D. 1865, May 1.—No. 1218.

NEWTON, WILLIAM EDWARD.—(*A communication from the American Waterproof Cloth Company.*)—“Improvements in the manufacture of flock fabrics.”

This invention aims at overcoming difficulties which have been experienced in dyeing or printing "waterproof cloths with woollen, silk, or fur surfaces." Hitherto "a colored flock for the face of the goods" has been used, owing to the fact that by the processes adopted more or less of the gums used has been sent to the surface of the cloth, and thus "a tendency to deaden or destroy the color as well as to give the face of the goods a spotted appearance has been created." By this invention the cloth is submitted to a steam heat of from 220° to 290° Faht. for 20 or 30 minutes. "This process has the effect of evolving all the chemical action produced by the ingredients used in the rubber, gutta-percha, or other mixtures of which the cloth is composed; after this the cloth is submitted to a bath of muriate of tin at from four degrees to twelve degrees of strength." After removing the goods from this bath, "they are submitted to a bath of aqua ammonia and sal soda of a strength sufficient to neutralize the muriatic acid or any impurities or other chemical negatives which may be upon the face of the cloth; this latter application may be used either before or after the bath of muriate of tin. The goods are then submitted to a solution of sulphuric acid and chloride of lime in order to thoroughly oxydize the previous deposit of tin, and afterwards to a solution of sulphuric acid and water to remove the lime." A mordant is thus formed for any colour in dyeing or printing, and the desired colour may be obtained at a lower temperature of heat or steam, and of a more uniform and beautiful shade than by any process heretofore known."

[Printed, 4d. No Drawings.]

A.D. 1865, May 4.—No. 1248.

CALDWELL, FREDERICK.—"A machine or apparatus for tying or winding strings or threads upon a certain part or parts of hanks of cotton, silk, linen, thread, worsted, merino, or other yarn previous to dyeing the same."

This invention consists in machinery in which is "framing, consisting of standards connected by tie-bars, supports or forms, bearings for the several parts of the apparatus; one or more of these tie-bars forms a bed upon which slides a piece in which are bearings for a main driving shaft, and also

“ a shaft screwed at one end thereof; the other ends of these
 “ shafts are supported by and work in fixed bearings at or
 “ near one end of the framing. The screwed shaft is provided
 “ with a handle by which it may be turned to move the
 “ sliding bearers nearer to or further from the fixed bearings.”
 “ Each hank is placed at each end upon a hook or similar
 “ contrivance at the end of two or more spindles working in
 “ the moving and in the fixed bearings. The main driving
 “ shaft has toothed wheels at or near either end outside the
 “ fixed and sliding bearings; these wheels gear into other
 “ wheels on the outer end of the hooked spindles, one of
 “ which spindles has a screw cut upon it, which takes into a
 “ wheel on a spindle provided with one or more speed pulleys,
 “ over which is passed a strap which also passes round a
 “ pulley on an axle, upon which is a toothed wheel, which
 “ moves a rack attached to a perforated bar, through the
 “ perforations of which, or through guides used in lieu
 “ thereof, the strings, cords, or threads are passed from a
 “ number of spools from which they are supplied, such strings,
 “ cords, or threads are each tied tightly round the portion of
 “ the hank or yarn where required, and the machine being
 “ put in motion, and the required number of revolutions
 “ made, the strings are cut and tied; the hanks are then
 “ unhooked or loosed, when they are ready for dyeing.” The
 machinery is either horizontal or vertical, and “ the strings,
 “ cords, thread or yarn spools may be unwound as required
 “ by a series of wheels, one of which may gear into a wheel
 “ on the main driving shaft, or the spools may have a regular
 “ tension put upon them by a spring or weight, or equivalent
 “ contrivance.” The same object may be effected “ by
 “ placing each hank in a cylinder or frame constructed in
 “ such manner that the required number of spools of thread,
 “ cord, string, or yarn may revolve the requisite number of
 “ times.”

[Printed, 2s. 6d. Drawings.]

A.D. 1865, May, 23.—No. 1413.

HOLT, ISAAC, HOLT, WILLIAM, HOLT, JAMES, and MAUDE,
 JOSEPH.—(*Provisional protection only.*)—“ Improvements in
 “ dyeing and sizing cotton, silk, woollen, and other yarns.”

These improvements are, in reference to this subject, making
 “ a peculiar shaped bobbin consisting entirely of wire or light
 “ metal material ; the body of the bobbin consists of longitu-
 “ dinal strips of wire attached to light end pieces made circular,
 “ or any other convenient shape to confine the yarn within
 “ the length of the bobbin ; the yarn is wound on this skeleton
 “ bobbin, the body being perfectly open the yarn is free both
 “ inside and outside, so that when the bobbin with the yarn
 “ on it is immersed in the dyeing matter, it will penetrate
 “ and dye every thread, whereas this cannot be done in the
 “ cop.” The other improvement is in sizing of yarn.

[Printed, 4d. No Drawings.]

A.D. 1865, May 24.—No. 1420.

DALE, JOHN, and PARAF, ALFRED.—“Improvements in
 “ calico and linen printing.”

First, “ the preparation of ferrocyanide of ammonia by de-
 “ composing the ferrocyanide of potash with hydrofluosilicic
 “ acid, and saturating the filtered liquor of the fluosilicate of
 “ potash with ammonia.”

In the Provisional Specification nothing is said about this process.

Second, “ the combination of those salts of ferrocyanide of
 “ ammonia or other bases with a salt of oxyde of chromium,
 “ chrome alum, chloride of chrome, or similar salts, for the
 “ production of green colors upon cotton or linen by steam-
 “ ing.” The salts of chromium preferred are the chloride
 prepared by dissolving the oxide in muriatic acid and chrome
 alum. “ This second salt gives a more fast green than the
 “ chloride, but the chloride give a better shade.” Mixing
 also with colours “ ferrocyanide of tin, which salt produces
 “ all gradations of green, from the dark green, nearly black,
 “ to the light water green. The combination of the ferro-
 “ cyanide salts and salts of chromium thickened with starch
 “ is printed along with any other steam color, and when
 “ steamed the green will be produced.” The following is a
 mixture for printing on linen or calico:—“ 40 parts of ferro-
 “ cyanide of potash, 30 parts of ferrocyanide of ammonia, or
 “ any similar base which has more tendency to set free the fer-
 “ rocyanidric acid than the salts of potash, mixed with 8 parts
 “ of chrome alum if a very fast shade is wanted, or 12 parts of

“ chloride or nitrate of chromium if a less fast and more
“ beautiful shade is required.” This is thickened with starch,
and the goods printed are steamed for about half a hour and
“ passed through a solution of bichromate of potash.”

[Printed, 4d. No Drawings.]

A.D. 1865, May 25.—No. 1428.

MAXWELL, ROBERT.—(*Provisional protection only.*)—“ Im-
“ provements in applying coal-tar colors to cotton and
“ linen.”

These improvements consist “ principally in preparing the
“ cotton and linen, either as yarn or thread, or when woven,
“ for receiving the color, by treating it with a soap, or with
“ an oil, in a more or less saponified state,” as follows :—In
preference the material is bleached and “ steeped in a mixture
“ or combination of train oil and soda in which there are
“ about sixteen pounds of soda for every gallon of oil. The
“ material is then dried in a stove at a temperature of about
“ 180 degrees Fahrenheit. It is steeped twice or oftener in
“ the oily or soapy mixture, being stoved-dried after each
“ steeping. The superfluous oily matter is subsequently
“ removed by heating the material at a temperature of about
“ 130° Fahrenheit in a solution of soda, containing about five
“ pounds of soda for every hundred pounds of the material,”
afterwards washing it and wringing out the superfluous
moisture it is ready for the dye vat. In preference the ma-
terial is immersed in a solution of the colour in cold water, and
“ heat is gradually applied until a temperature of about 160°
“ Fahrenheit is attained, when the dyeing is completed, and
“ the material is dried and finished in the usual way.” These
colours may also be applied to those prepared materials “ by
“ any suitable printing or other process for applying colors
“ topically.”

[Printed, 4d. No Drawings.]

A.D. 1865, May 25.—No. 1443.

HENRY, MICHAEL.—(*A communication from Leon Pasquier and
Alphonsine Julie Dumont.*)—(*Provisional protection only.*)—
“ Improvements in treating fibrous materials and textile
“ fabrics and in producing soap.”

Combining two manufacturing processes or purposes into one operation, one being the treatment of the materials, and the other being the manufacture of soap. "For these purposes the materials or fabrics are treated with caustic alkali, as for example, caustic soda or potash, and with oil or an oleaginous or fatty substance in an open or close vessel," with heat or "by using a hot caustic alkaline liquor to which oil is added, and after raising it to a state of ebullition so that saponification may commence, the materials are placed therein, and it is kept in a state of ebullition for a short time and afterward evaporated, or it is left to settle and the soapy precipitates withdrawn." By this means "not only is a good soap obtained, but the materials are ungummed, scoured, cleansed, boiled, or purified in an improved manner, and when hemp, flax, or China grass is treated an improved fabric is produced. Sometimes for flax 30 to 50 per cent. of caustic soda at 36° Beaumé may be used with 15 to 25% oil; for silk 10% soda, and for wool 6% soda to 15% oil." But these proportions may sometimes be varied.

[Printed, 4d. No Drawings.]

A.D. 1865, May 29.—No. 1464.

HEINRICH, JEAN ALPHONSE.—(*Provisional protection only.*)—A "machine for washing raw materials worked out or unworked to be employed in the manufacture of fabrics, and specially of fabrics made into pieces."

This machine consists of two frames turning on their axles and "driven by bevelled toothed gearing of equal dimensions;" there are two draw rollers for the entrance or delivery of threads or textile fabrics. There is a "wooden table, on which come the substances to be washed;" there are wooden pins or pegs serving to guide the course of the substances to be washed, which advance one peg at each turn. There is a reservoir of water at a constant level; two pipes pierced with holes are above for distributing the water on to the substances to be washed. There is a driving shaft to guide the goods round the frames and on to the table, not only having recourse "to clothes or other means of enveloping and restraining them as much as required," but also, "according to requirement so arrange britles or beaters that the materials to be

“ washed undergo every necessary treatment. When the
“ materials should not only be beaten and kept in agitation,
“ but that they should also undergo a rubbing, special ap-
“ paratus, that is to say, eccentrics acting on one of the
“ cloths or to both in contrary directions are added to the
“ machine.”

[Printed, 8d. Drawing.]

A.D. 1865, June 10.—No. 1579.

DENTITH, JOSEPH MAYER. — (*Provisional protection only.*)—
“ Improvements in the manufacture and production of chromate
“ and bichromate of potash employed in dyeing and printing
“ woven fabrics.”

“ The combination and admixture of felspar and other well-
“ known potash-producing rocks with cromate of iron or oxyde
“ of chrome in the proportion of about twenty parts of potash-
“ producing rock added to seven parts of chromic ore, and
“ subjecting such materials when in combination to a bright
“ red heat, say about one thousand nine hundred Fahrenheit,
“ which will thereby produce a superior and inexpensive potash
“ required for the purpose ” of “ dyeing and printing calico,
“ woollen, or other textile woven fabrics.”

[Printed, 4d. No Drawings.]

A.D. 1865, June 10.—No. 1580.

HENDERSON, JOHN. — (*Provisional protection only.*) — “ Im-
“ provements in apparatus for printing wool, worsted, or other
“ fibrous materials.”

Employing “ a cylinder or drum of the required diameter
“ and width, and of a character similar to those used in print-
“ ing yarns for the manufacture of what are called tapestry
“ carpets.” Around this drum or cylinder is wound the wool
or other material required to be printed, and across the peri-
phery of this drum is applied “ a printing roller fitted with a
“ feeding roller or rollers working in a trough containing the
“ requisite colouring matter. To the surface of this printing
“ roller are attached raised slips of metal or other material of
“ a thickness corresponding to the breadth of colour to be
“ received. To one end of the printing roller is applied a
“ pinion, the teeth of which gear into the teeth of a wheel or
“ rack on the drum, the large-toothed wheel bearing the same

“ proportion to the smaller one that the circumference of the
 “ drum bears to that of the printing roller. To each end of
 “ the printing roller is attached a spring and screw, by means
 “ of which the extent of pressure exerted against the cylinder
 “ round which the wool or other material is wound may be
 “ regulated. The printed roller having been properly put
 “ into gear with the cylinder, so that the raised slips on the
 “ surface of the former come into contact with the wool or
 “ other material on the latter, the cylinder or drum is caused
 “ to revolve, and in doing so to communicate motion to the
 “ printing roller, which in its turn imprints the requisite im-
 “ pressions of colour on the wool or other material.” When
 the desired impressions have been made, the printing roller
 is withdrawn from contact with the cylinder, and the printed
 material is removed to be steamed, &c. As many cylinders
 may be used as there are colours required to be laid on.

[Printed, 4d. No Drawings.]

A.D. 1865, June 12.—No. 1585.

HUGHES, EDWARD THOMAS.—(*A communication from Prosper Monnet.*)—(*Provisional protection only.*)—“ Improvements in the
 “ means of producing from rosaniline blue and violet colouring
 “ matters soluble in water.”

First, a mixture is made of “ equal parts of blue of aniline
 “ of commerce, and sulphate of rosaniline or any other salt
 “ of rosaniline, the proportions being varied according to the
 “ tinge of red or blue required.” One part of the mixture is
 dissolved in six parts by weight of sulphuric acid at 66°
 Beaumé, heating not above 60° C. or 108° Fæht., and, when the
 solution is perfect, the mixture is heated to 140° C. or 252°
 Fæht., and drawn back from the fire.

Second, “ treating with sulphuric acid in the same propor-
 “ tions, conditions, and degrees of temperature and insoluble
 “ violet, prepared as follows:”—About 9 lbs. of aniline of
 commerce, in which are dissolved about 2 lbs. 3 ozs. of red of
 aniline, chlorhydrate of rosaniline for example, are heated to
 about 180° Fæht., and into this is thrown about 7 ozs. of acetate
 of soda, dry and powdered; “ the temperature is then raised ”
 to 306° Fæht.; “ the red changes by little and little to violet,
 “ the tint of which becomes of a deeper blue if the action is
 “ prolonged.” When the desired shade is obtained, the whole

is cooled, and about 10 lbs. 12 ozs. "of white hydrochloric acid of commerce at 22° Beaumé" are carefully added, and this mixture is boiled for some minutes, and when dissolved the liquid, when cold, is poured "into ten times its weight of cold water, and the violet is precipitated and collected upon a filter, washed and dried." "It is the common insoluble violet thus obtained that is treated with six times its weight of sulphuric acid in following the directions given for the first process."

[Printed, 4d. No Drawings.]

A.D. 1865, June 13.—No. 1605.

LAURENT, FRANÇOIS ALEXANDRE, and CASTHELAZ, JOHN.—(*Provisional protection only.*)—"Improvements in the manufacture of phthalic acid and chloroxynaphthalic acid, and in dyeing and printing."

Naphthaline is treated with hydrochloric acid and alkaline or earthy chlorates; shaking them together when cold a mixture is formed "consisting principally of bichloride of naphthaline and bichloride of chloro-naphthaline. The mixture of these two bichlorides, either purified or not, is oxidized by means of nitric acid and heat," preferring "to work with a bain-marie; in this manner a mixture is obtained consisting of phthalic acid of chloride of chloroxynaphthyle, accompanied with a residue. By treating with boiling water the phthalic acid is separated, and it crystallizes on cooling. The remainder, when treated with alkalies or the salts formed by them with weak acids, gives a solution of a salt of chloroxynaphthalic acid. This solution treated with a mineral acid gives chloroxynaphthalic acid, still however in an impure state; to purify it, it is dissolved in water in the presence of a base or of a salt, which seizes on the impurities and holds them in an insoluble form." The phthalic acid is employed for the manufacture of benzoic acid. Fabrics, fibres, or yarns and paper are dyed and printed with chloroxynaphthalic acid.

[Printed, 4d. No Drawings.]

A.D. 1865, June 20.—No. 1649.

MINGAUD, PHILIPPE.—(*Complete Specification but no Letters Patent.*)—"Improvements in obtaining jellies, syrups, drinks,

"and other products from the tree *arbutus unedo*, known as 'the arbutus.'"

"The following are the ingredients found to be contained 'in the leaves and fruit.' A substance which the inventor calls "'parapectine' starch, tannin, wax, green and violet 'coloring matter.' Then follow processes for treating the fruit in order to obtain or make from the fruit jellies, jam, syrup, liqueur, wine, vinegar, &c., and it is said that 'in order 'to obtain a fine violet color I treat the coloring matter of 'the arbutus with caustic potash,' and the crushed leaves brought in contact with sulphuric ether give a beautiful green colour, which changes to black by the addition of iron, precipitating the green colouring matter.

[Printed, 4d. No Drawings.]

A.D. 1865, June 26.—No. 1702.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Martin Moeglen.*)—"Improvements in machinery for printing "in colors."

"Arranging the gear for driving the coloring and printing "rollers in machinery for printing in colors" as follows, whereby "the continuous and successive printing of fabrics "and other articles in several colors is effected." The fabric or material to be printed is wound upon a roller, the motion of which is regulated by the working of the machine. At the opposite end of the machine is a receiving roller. The fabric as it comes from the roller is directed between the first pair of rollers, whereby the first colour is printed. One of the pair of rollers carries the design in relief, on which the colour is spread by rollers dipping in a colour trough. The impression is effected by the other roller pressing the fabric against it. The fabric then passes on between another pair of rollers fed with a different colour for a second impression, and so on. "Upon one "side or upon both sides of the machine, series of toothed gear "regulating the rotation of the printing and coloring rollers "are fitted. A main wheel or pulley driven by some "prime mover transmits its motion through a pinion on its "axis to a first series of toothed wheels, above which there is "a second series of less diameter than the wheels in the first "series, in order to increase the speed. These wheels drive

“ the color and printing rollers.” The “ adjustment of the machine comprises, as in all machines of the same class, the combination and position of the reliefs upon the printing rollers, as well as the distance between these rollers. The distance must be proportioned to the diameter of the rollers, to the arrangement of the pattern, and effect of the colors.” The frame is arranged “ so as to allow of the easy and perfect adjustment of the working parts.”

[Printed, 8d. Drawing.]

A.D. 1865, June 29.—No. 1730.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Stanislas Vigoureux.*)—“ Improvements in printing threads employed in weaving.”

“ Causing the threads to adhere to and be supported upon a bed, and while thus sustained to receive the necessary impression and proceed into the loom,” as follows:—“ As the warp threads are unwound from their roller they meet a bed formed of canvas, calico, paper, or other suitable material, the thread and the bed move together, and receive a printing from a cylinder or block. At the same time that the threads receive the impression the dampness of the color causes the threads to adhere throughout their entire length to the bed, the thread and bed travel as one towards the loom to the distance necessary to the crossing of the threads for weaving. At this point a blade or instrument having a to-and-fro motion detaches all the threads adhering to the bed and separates them from it. The threads continue their course to undergo the operation of weaving, and the bed is directed over a roller. The adhesion of the threads may be caused by the natural stickiness of the threads damped by the color, which ordinarily possesses a sizing element, or by a special adhesive material applied either to the threads or to the bed. It is preferable that adhesion should take place throughout the entire length of the threads, nevertheless, as the bed serves as a support to the threads they may be caused to adhere only for part of their length, but across the breadth of the whole of them.”

[Printed, 4d. No Drawings.]

A.D. 1865, July 8.—No. 1816.

DUFRENÉ, HECTOR AUGUSTE.—(*A communication from Francisque Massot and Auguste Juquin.*)—"An improved self-acting apparatus for obtaining a circulation of volatile liquids."

This apparatus consists of "two recipients placed one over the other and communicating together by means of two tubes open at each end. The first tube is immersed to the bottom of the lower recipient, and opens at the level of the bottom of the upper recipient; the second tube rises to a certain height (near to the top) in the upper recipient, and plunges in the lower one something less than the first;" there is a hole in this tube towards the top of lower recipient. "The tubes being so disposed, if a volatile liquid is poured in the lower recipient and caused to be heated the vapour produced will determine a pressure which will cause a portion of the liquid to rise through the first tube into the upper reservoir, but the level of the liquid falling at the same time in the lower vessel, will become level with the lower extremity of the second tube, and consequently the steam forming pressure will escape." (The hole in the second tube above spoken of, which is towards the top of the first recipient, is for the purpose of facilitating the escape of steam and the return of the water to the first recipient,) "whereupon the liquid which has been raised having no longer any resistance will fall by its own weight into the lower vessel, and if the fire is not removed it will rise as above described, to descend again, and so on indefinitely so long as the fire remains lighted and there is liquid in the lower vessel above the level of the bottom of the second tube." "This circulation of water or of any other volatile liquid can be utilized for infusing coffee, tea, pharmaceutical and coloring principles, to the cleaning of linen," &c.

[Printed, 6d. Drawing.]

A.D. 1865, July 14.—No. 1850.

FULTON, DAVID, and FULTON, JOHN.—(*Provisional protection only.*)—"Improvements in mandrils for rollers, such as are used for printing or embossing."

Constructing mandrils for rollers, "so as to be adjustable with facility and accuracy to rollers of different sizes," as

follows:—In one modification, the “mandril has formed or
“ fixed on it near one end a series of longitudinal inclines,”
on which “ a series of segments are fitted to slide, expanding
“ by the action of the inclines as they are moved towards the
“ end of the mandril. The segments enter inside the roller,
“ but are formed with shoulders to bear against the end edge
“ of the roller. On the other end of the mandril there is
“ fitted a moveable tubular piece, which can be adjusted along
“ the mandril by a nut connected to it, and working on a
“ screw cut on the mandril. The moveable tubular piece is
“ formed with a series of longitudinal inclines, similar to
“ those at the other end of the mandril, but lying the opposite
“ way, and the inclines have similar shouldered segments
“ fitted to slide on them. In order to put a roller on the
“ mandril, the moveable tubular piece is taken off, the roller
“ is put on, its entering end moved up to the shoulders of the
“ segments on the fixed inclines, and forcing these segments
“ up the inclines until their segmental surfaces, which are
“ parallel with the bore of the roller, bear firmly against the
“ inside of the roller. The moveable tubular piece is then put
“ on the mandril, and entered inside the other end of the
“ roller, and it is screwed up until its segments, being moved
“ up the inclines by their shoulders catching on the end
“ edge of the roller, bear firmly against the inside of the
“ roller.”

In another modification, the mandril is made so that a roller
may be fixed on it with its outer surface truly concentric,
although its bore may not be true; this is done by making the
segments adjustable separately, “by tapping a screw through
“ the shoulder of each, such screw bearing on the end edge of
“ the roller instead of the shoulder.”

[Printed, 4d. No Drawings.]

A.D. 1865, July 21.—No. 1905.

CHAUDET, JEAN HENRI.—“An improved system of manu-
“ facturing salts, sulphates, and acetates of chrome, and of
“ applying them as mordants in dyeing and printing textile
“ substances, both animal and vegetable.”

By causing a current of “sulphurous acid to pass into a
“ solution of no matter what chromate, the chromic acid is
“ disoxygenated and returned to the state of oxide.” “In

“ this reaction, independently of the sulphates formed, there are also produced a certain quantity of sulphites.” “ By adding to the chromates the equivalent in sulphuric acid of the base combined with the chromic acid, no sulphites are formed, and the operation is more rapid.” In preference, the bichromate of lime “ direct from the treatment of chrome ore by lime ” is employed. The sulphate and nitrate of chrome is used “ as a mordant for wool and silk, in order to obtain entirely novel shades of color with the divers tinctorial matters.” For cotton and textile vegetable matters employing the “ acetates, nitrates, citrates, and tartrates of chrome,” obtained “ easily by double decomposition.” “ By employing the soluble salts of chrome (sulphate, nitrate, and acetate of the protoxide and sesquioxide of chrome) as mordant fast colors are obtained, such as could not be obtained with the mordants hitherto used; for example, the colors obtained no longer turn green on exposure to the air, like those obtained by the use of bi-chromate of potash,” which is caused by “ the chromic acid in transmitting its oxygen to the coloring matter transforms itself into oxide of chrome, which is naturally green.” “ To produce the conversion of the chromic acid into oxide of chrome on certain textile substances such as wool,” the wool, mordanted with bichromate of potash, is put in contact with “ a reducing body, such as sulphurous acid, the alkaline sulphites, the organic acids, alcohol, sugar, and its congeners, and other bodies ” which deoxidize the chromic acid, and “ after this operation the substance is washed, and afterwards dyed the desired color.” “ To obtain mixed colors, a mordant with several coloring matters is employed, and often several mordants with one or more colorants.”

[Printed, 4d. No Drawings.]

A.D. 1865, July 25.—No. 1932.

JOHNSON, JOHN HENRY.—(*A communication from Charles Dyonise Reinfeld.*)—(*Provisional protection only.*)—“ A new or improved detergent solution to be used in the washing or cleansing of wool and woollen fabrics.” This detergent solution is obtained by “ making a solution of carbonate of soda, and according to the quality of the wool, evaporating this solution to a density from 80 to 90

“ degrees of the alkalimeter. To this solution is added soap powder, in the proportion of from two fifths to three fifths of the weight of the solution. The result is a substance resembling vegetable soap. By the use of this detergent the washing or cleansing of the wool may be accomplished with cold in lieu of hot water whatever may be the temperature of the atmosphere at the time.”

[Printed, 4d. No Drawings.]

A.D. 1865, July 27.—No. 1947.

BOBCEUF, PIERRE ALEXIS FRANÇOISE.—(*Provisional protection only.*)—“ Improvements in the preparation and application of certain colouring matters.”

The production of aniline dyes and colouring matters, either in a solid or liquid form, by “ the double reaction or decomposition which takes place when certain aniline salts are treated or mixed with other salts, thus, for instance, if a double decomposition of hydro-chlorate of aniline is effected by mixing with it chromate or bichromate of potash the result is the production of, in the one case a deep blue, and in the other of a deep green colour.” Also, “ by treating the same salt of aniline by the yellow or the red prussiate of potash, greens and blues of lighter shades are produced.” The filtrates and wash waters resulting from the precipitates are equally useful as liquid dyes. “ The proportions in which the different substances are employed would necessarily vary according to the different shades of colour desired.”

[Printed, 4d. No Drawings.]

A.D. 1865, July 31.—No. 1972.

ROBINSON, BENJAMIN, and VARLEY, JOSEPH.—“ Apparatus for promoting the combustion of fuel in furnaces of steam boilers, dyer's or brewer's pans and other furnaces.”

The furnace doors are double, the inside ones being perforated. Both can be hinged, but the plain door may also be made to slide on the perforated door. A pipe, connected with the steam chamber, is bent into each of the ash-pits, and it is perforated on the side towards the fire-bars, so that by opening its tap steam can be projected against them. A perforated plate forms the back of the hollow fire-bridge. At the

front is a movable flap, attached to a rod in front, whereby air can be admitted into the bridge, and thence through its perforated back.

[Printed, *sd.* Drawing.]

A.D. 1865, August 7.—No. 2044.

POLLOCK, WILLIAM, and STOBO, JOHN.—“Improvements
“ in apparatus for washing yarns.”

First, “the constructing, arranging, and actuating of the
“ parts of apparatus for washing yarns so that the hanks are
“ carried round a horizontal circular course, and have a
“ swinging motion imparted to them excepting where they
“ are put on and taken off.”

Second, “the arranging of the inlets and outlets for the
“ water and the guide rails.”

Third, “the obtaining of a swinging motion combined with
“ a progressive motion.”

There are a number of horizontal reels for receiving the
yarn hanks which “are moved round in a circle like the
“ spokes of a wheel, the hanks hanging down from them into
“ a segmental annular trough which is full of water.” This
trough “forms nearly a complete circle, the part deficient
“ being where the hanks are put on and taken off the reels,”
at which place the water enters the trough, by preference,
“ through a slot situated at the upper part of and radially
“ across the end of the trough, and it passes round in the oppo-
“ site direction to that of the progressive motion of the reels
“ with the hanks, and is discharged at the end where the
“ hanks are entered, by preference, by two outlets at or near
“ the top or bottom respectively. The trough is of cast iron,
“ but smooth brass or copper rods are placed a little within
“ the edges to guide the hanks and keep them from rubbing
“ thereon.” The motions described are produced “by two
“ vertical shafts, one of which is tubular and has the other
“ passing through it. The central shaft is driven slowly
“ round by a worm and worm wheel below, and has fixed
“ upon it a horizontal disc upon which the spindles of the
“ reels are jointed. The tubular shaft is made to turn a short
“ distance backwards and forwards by means of a lever upon
“ it connected to a revolving crank; and it has fast on it a
“ horizontal disc or wheel which is formed with a wedge-

“ shaped groove in the upper side of its rim. Each reel has
“ fixed on it a pulley with a wedge-shaped edge which enters
“ the groove of the horizontal wheel. The reels with their
“ pulleys are loose on their spindles, but the pulleys are
“ formed or fitted with toothed rings on their inner sides,
“ into which locking catches enter and prevent the pulleys
“ from turning except at the proper times. The locking
“ catches are acted upon by inclined pieces on the upper hori-
“ zontal disc, and when they are in gear the grip of the lower
“ or grooved wheel on the pulleys causes the reels to swing
“ forwards and then backwards with the reciprocating motion
“ of that wheel.”

[Printed, 1s. 4d. Drawings.]

A.D. 1865, August 8.—No. 2053.

BUCHANAN, JAMES, junior, and BOYD, ROBERT. — (*Pro-
visional protection only.*)—“ Improvements in printing and
“ dyeing yarns and fabrics of cotton or other vegetable
“ materials.”

“ Precipitating or forming an insoluble salt or oxide of
“ copper in or on the yarns or fabrics, and then applying a
“ a neutral or acid salt of aniline, but without any oxidising
“ agent. For printing, the cloth is prepared in a solution of
“ carbonate of soda containing about six ounces per gallon ;
“ it is then dried and passed into a solution of sulphate of
“ copper containing about eight ounces per gallon, and is
“ afterwards washed and dried. The cloth is then printed
“ with a salt of aniline, such as the hydro-chloride thickened
“ in the usual way. For dyeing the yarns or fabrics are pre-
“ pared in the same way, and are then passed through a
“ solution of a salt of aniline.” The above proportions may
be varied, “ and an insoluble salt or oxide of copper may be
“ formed or precipitated in the materials by other well-known
“ means.” “ By the term aniline is meant the aniline of
“ commerce and the analogues of aniline.”

[Printed, 4d. No Drawings.]

A.D. 1865, August 9.—No. 2070.

SCHAD, LUDWIG.—“ Improvements in the production of
“ violet colours from magenta for dyeing and printing.”

"Treating either the base rosaniline or its salts with chlorides, iodides, or bromides of ethylene." The proportions may be varied, but a good result is obtained by taking "eight parts of chloride of ethylene, and four parts of rosaniline, and one part of spirit." The mixture is heated in a close vessel "to a temperature of 300° F. or thereabout, which heat is to be maintained from two to three hours, or until the whole of the rosaniline is converted into the desired purple colour. The time required for this operation depends in great measure upon the capacity of the vessel, and will readily be acquired by experience." The whole is then allowed to cool, and the vessel connected with a condenser, the excess of chloride of ethylene and spirit is distilled off, and may be used again. "The yellowish green residue left in the vessel is the chloride of the new coloring matter, and when dissolved in spirit it is ready for ordinary use in dyeing and printing. The operations with the iodide or bromide of ethylene are precisely the same."

[Printed, 4d. No Drawings.]

A.D. 1865, August 11.—No. 2083.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Stanislas Vigoureux.*)—(*Provisional protection only.*)—"Improvements in treating and printing threads employed in weaving."

"Causing threads to adhere by gum or otherwise for the whole or part of their length upon a bed before, during, or after being printed, so that the printed threads may be stripped from the bed and wound off without becoming entangled or intermixed preparatory to their being employed in weaving."

The process described in the Provisional Specification, No. 1730, A.D. 1865, "applied solely to printing warp threads."

[Printed, 4d. No Drawings.]

A.D. 1865, August 16.—No. 2113.

SMITH, JOHN, and SCHOFIELD, WILLIAM.—"Improvements in machinery use in washing, bleaching, and dyeing yarns and textile fabrics in the hank."

"First, the combination of machinery in which a series of holders rotate on their axes, and revolve around a centre, or any modification of machinery combining the two movements for effecting the same object."

Second, "combinations of machinery in which one or more revolving holders with flat sides rotating in the same or in contrary directions are employed." A series of flat or other suitably shaped holders are mounted on axles placed radially above the vat or cistern containing the "liquid required, and in which the hanks are partially immersed; these holders are made to revolve rapidly by means of a friction disc acting on friction pulleys fixed to the axles of the holders. When the yarn or fabric becomes tangled, the direction of motion of the holders can be reversed to straighten it again by another friction disc acting on the opposite side of the friction pulleys, and the motion is reversed by a lever." The axles of the holders are supported in bearings fixed to a revolving table which rotates slowly on its axle." When removing and replacing the finished hank, "the axle of the holder comes between stationary guides which hold the friction pulley clear of both the friction discs, and thus arrest the rotary motion of the holder on its own axis, but permitting it to move with the revolving table to which it is connected." "The revolving holders may be used separately or combined in a line," with or without a separate trough or cistern. For dyeing in the hank, a series of holders are placed side by side and revolve in a trough or cistern, "the axles of the holders are connected by gearing, and they are made to rotate alternately in contrary directions to prevent the tangling of the yarn or fabric by a toothed segment actuated by a crank or other equivalents; this machine may be used for rinsing out or washing the hanks."

Third. "The application of rollers covered with vulcanized india-rubber or other suitable compound of india-rubber to squeezing or expressing moisture or liquids used in preparing for dyeing, and for dyeing yarns and textile fabrics in the hank."

[Printed, 10d. Drawing.]

A.D. 1865, August 17.—No. 2126.

BROOMAN, RICHARD ARCHIBALD. — (*A communication from Stanislas Vigoureux.*) — (*Provisional protection only.*) — "Im-

“ improvements in washing fabrics and threads, and in machinery employed therein.”

“ Supporting the fabrics or threads upon a bed maintained at or about the surface of the water, and capable of yielding and again rising to its level on being acted upon as hereafter explained.” “ A set or sets of beaters are arranged in the form of rods, and by cams or excentrics” are caused to fall in contact with and rise from the bed. The fabric or thread is made to move across the yielding bed and in its passage receives blows from the beaters. The bed with the fabric or thread is made by the action of the beaters to dip into and rise from the water, whereby thorough washing is effected.” Although a bed capable of yielding is preferred, yet a fixed bed may be used.”

Among other uses, the above arrangement “ is particularly adapted to the washing of printed threads and stuffs.”

[Printed, 4d. No Drawings.]

A.D. 1865, August 18.—No. 2129.

SMITH, GEORGE HEDGCOMBE.—(*Provisional protection only*).—

“ An improvement in dyeing and preparing hemp and other fibres for the manufacture of yarns and fabrics.”

This invention consists in steeping “ the hemp or other fibres either as fibres, yarns, or fabrics in a solution of tan and soda in the proportion of about forty pounds of tan to about ten pounds of soda, which is about sufficient for two hogsheads of liquor, to which is added about half a pound of flag anatto, together with some or one of the materials commonly used in dyeing. All dyeing materials are applicable.”

[Printed, 4d. No Drawings.]

A.D. 1865, August 18.—No. 2131.

CLARKE, RICHARD.—(*Provisional protection only*).—“ A new and improved application of imitation embroidery to be employed for the ornamentation of crinolines.”

“ Applying ornamental patterns or designs to the skirts after they are made or sewn together by means of blocks or printing cylinders arranged in proper position for the purpose. The skirt having been made is mounted and secured on a conical block or core, and a printing cylinder contain-

“ing the design is caused to revolve thereon, having its axis parallel to the surface of the cone; or printing blocks having arms radiating to the apex of the cone may be employed, or stencil plates may be cut to fit a portion of the circle, and the design may be stencilled on a part at once. When cylinders or blocks are used, either the core carrying the skirt may be caused to rotate, or the cylinders may be driven themselves, so that the patterns will be continuous, and without showing marks where the pattern unites, as skirts do when printed before being made. This is adapted as a substitute for the expensive braid embroidery hitherto employed.” “By means of the arrangement of the cylinders or blocks it can be applied to any skirts after they are made.”

[Printed, 4d. No Drawings.]

A.D. 1865, August 26.—No. 2194.

WANKLYN, JAMES ALFRED.—“Improvements in the manufacture of violet dye-stuffs.”

The employment of alcohol or other substances, such as wood naphtha, or pyroxylic spirit in conjunction with the iodide of isopropyl and rosaniline in the preparation of these dye-stuffs, as follows:—“Glycerine is converted by means of hydriodic acid into a compound containing iodine, and which is known as iodide of isopropyl or hydriodate of propylene;” about equal parts by weights of this substance and rosaniline and alcohol are heated together “in a closed vessel provided with a safety valve and pressure gauge to a temperature of about 212° F.,” and the application of heat continued until the desired violet tint is obtained, which may be known by removing from time to time a small quantity of the product; and dissolving the same in alcohol or other solvent, and observing the colour of the solution so produced, The colour so obtained is dissolved in alcohol or other solvent. any insoluble matter separated, and the solution employed for dyeing and printing; or the solution may be heated to about 180° Faht., adding an aqueous solution of caustic soda, and diluting with water, the precipitate is collected and combined with acid by heating with a dilute acid, such for example as acetic acid. The product is separated by decantation or filtra-

tion, and may be dried, or at once be dissolved in alcohol, &c., and be employed "for dyeing and printing."

[Printed, 4d. No Drawings.]

A.D. 1865, August 28.—No. 2201.

PARAF, ALFRED.—(*Provisional protection not allowed.*)—"Improvements in dyeing and printing woollen or silk fabrics and yarns."

"Giving upon the silk or wool a cotton preparation, whereby it may receive colors capable of being placed on cotton or linen only." Metallic copper is placed in a solution of ammonia, with access of air along with cotton. "There is a production of ammoniate of copper, and a solution of the cotton is effected. The solution of the cotton is then used to impregnate the wool or silk by padding or other means, and while the wool or silk is in the damp state," it is passed into a weak solution of any mineral or organic acid, whereby the cotton is precipitated into the fibre of the silk or wool. It is now washed and dried, and is in a fit state to receive the preparation used for producing aniline black on cotton or linen. And this preparation may consist of an aniline salt, with chlorate of potash, together with an acid capable of decomposing the same, or with an aniline salt and chlorate of potash together with salts of copper, or other process."

[Printed, 4d. No Drawings.]

A.D. 1865, August 28.—No. 2206.

BONNEVILLE, HENRI ADRIEN.—(*A communication from Auguste Jeannolle.*)—(*Provisional protection only.*)—"Improvements in dyeing and fixing colours in fibres, yarns, and fabrics."

These improvements consist in an "improved process for fixing colours in fibres, yarns, and fabrics, and in an improved mode of producing a fast or permanent black dye," as follows:—"Impregnating the fibres, yarns, and fabrics with a solution of resinous matter in alcohol or other suitable composition capable of forming an enduring varnish," and then submitting them "to a distilling process, which leaves only the varnish adherent to them. This process may or may not be followed by a baking or heating intended

“ for completing it. Greater or less pressure may be used in the still. All the known colours except the fast black may be fixed by this process. To obtain a fast black to be fixed by this process, the following baths should be employed:— First, pyrolignite of aluminum, decomposed by heat to fix the aluminum; second, campeachy or logwood, with a yellow or astringent matter; third, a weak bath of phosphate or acetate of copper, and a heated bath of bichromate of potash.”

[Printed, 4d. No Drawings.]

A.D. 1865, September 2.—No. 2267.

ELLIS, HENRY.—“ Improvements in the manufacture of compounds of silica, and in the production of silicated alkaline inks, colours, and dyes.”

These improvements are, in reference to this subject, the methods of manufacturing and producing silicated alkaline colours and dyes, as follows:—Precipitating colouring matter by means of supersilicates or compound silicates. Such compounds dissolved in solutions of alkaline silicates will yield various colored inks, and liquid dyes of a permanent nature. For these purposes all the soluble silicates mentioned in No. 2645, A.D. 1862 are employed as well as the ordinary commercial silicates, also “ the ammonio-silicates of soda, and of potash, and of the earths and metals.” Tungsto-silicates may also be used. “ Dyes and other substances which yield colouring matter to alkaline solutions, whether such dyes or substances be of an animal, vegetable, or mineral nature, are capable of being employed for the purposes of this invention, the ammoniacal solutions being in many cases preferable.” “ Biborate of soda may also be used as a solvent of dyes and substances containing colouring matter, and solutions produced by this agent, and also by ammonia, and by other alkaline agents, are in many cases capable of being sufficiently silicated without precipitation of the colouring matter by the simple addition of a supersilicate of soda or potash.” “ Aluminates of potash or soda may be used as solvents for dyes and colours, but when these are added to solutions of the silicates, the colours will be precipitated, and will require to be redissolved by means of alkaline silicates, or caustic soda, or

" potash, or the colours may be combined first with a sub-silicate, and the desirable quantity of supersilicate afterwards added."

[Printed, &c. No Drawings.]

A.D. 1865, September 11.—No. 2327.

LIGHTFOOT, JOBS.—"Improvements in dyeing and printing fabrics and yarns, and animal or mixed animal and vegetable substances."

The preparation of these materials or fabrics "in such a manner as to prevent the deoxidizing property of the animal matters from hindering the formation of aniline black, by an oxidizing or chloridizing process of much greater intensity than hitherto followed," or until the following test "shows that the maximum has been attained." "Take a dilute solution of permanganate of potash in two test tubes, and into one put a piece of the oxidized wool, and into the other a piece that has not been oxidized, and apply a gentle heat, the solution containing the one that is in a fit state to receive the aniline black remains pinky, but the other is decolorized immediately." To prepare the substance, "take for every pound of cloth, wool, yarn, silk, delaine, feathers, or animal substance (well cleaned), 6 gallons of water at about 100° F., 2½ ounces by weight of hydrochloric acid of commerce, and 1 pint of hypochlorite of lime in solution containing 16 ozs. of hypochlorite of lime per gallon." The goods are kept "in this solution from 20 to 30 minutes, or until the wool becomes quite yellow," when they are washed well in water and dried. In dyeing coburgs and similar goods, they are steeped or padded either before drying or after in the following dye:—"1 gallon of water, 4 ozs. of chlorate of potash, 12 ozs. of chloride of aniline crystals, 6 ozs. of sal-ammonia, 2 ozs. of sulphate of copper," then dried at "as low a heat as possible" and aged for two or three nights in a moist room at from about 76° to 80° Faht. The goods are raised either in water or any weak alkali, or in preference "in a weak cold solution of neutral chromate of potash." "If a brownish black is required, the goods may be subsequently dyed in a weak hot solution of archill or cudbear." When the prepared cloth is used for printing,

the aniline black color is printed on as described in No. 151, A.D. 1863, and dried and aged in a warm moist room and raised in weak alkali as before; the goods are then passed "through a warm solution of sulphite or hyposulphite of soda, or a solution of any suitable deoxidizing agent to improve the white or whites; or the goods may be passed through Mr. Thom's sulphuring apparatus, which restores the white in the parts not printed, but does not injure the black. It is preferable after sulphuring to repass the goods through a weak alkali."

[Printed, 4d. No Drawings.]

A.D. 1865, September 12.—No. 2335.

HOLLIDAY, JOHN.—(*Provisional protection only.*)—"Improve-
ments in preparing certain coloring matters."

Taking one part of "the dye usually known in commerce as 'cotton violet' (made from salts of rosaniline), of various violet tints, which dye is fugitive, rendering it valueless for dyeing wool, silk, and other fabrics," and "adding to it about 6 parts of water, or it will act better if 4 ozs. more or less of liquid ammonia sp. gr. 880 be added thereto, though any alkali or salt of an alkali, such as common salt, may be used instead." This causes the colouring matter previously in solution to be precipitated, when it is washed and placed upon filters to dry. It is then in a fit state for sale, but it is preferred to dissolve it in alcohol, so that it is fit for use direct into the bath." "To render the color purer and vary the tint," 1 part of the precipitate described is dissolved in "from 8 to 16 parts methyl alcohol (wood naphtha)," and when dissolved half a pound (more or less may be used) of sulphuric, muriatic, or nitric acid is added. This mixture is allowed to stand some time, or the operation is facilitated by heating it to its boiling point a few minutes, and when cold this is again treated "with alkaline water," and precipitated as above described. This latter operation may be repeated to advantage. The above proportions may be varied. In all cases "the methyl alcohol (wood naphtha)" can be recovered "by distillation from the liquid after the color is precipitated."

[Printed, 4d. No Drawings.]

A.D. 1865, September 19.—No. 2388.

BROOMAN, RICHARD ARCHIBALD. — (*A communication from Narcisse Guilbot and Pierre Heritier*).—(*Provisional protection only*).—"Improvements in engraving on metal."

Producing on metal plates or rollers engravings in intaglio or relief of objects photographed or drawn in one or several colours for printing on fabrics, leather, or other substances.

First, engraving in relief; drawing, of any convenient dimensions, flowers, fruits, animals, and other objects or designs.—If there are several colours, prick or bite each colour and transfer them to as many stones, separated by marks; then strike off as many impressions on paper and transfer them to metal, varnish them with engraver's varnish, or ink them by means of a roller with lithographic ink thickened by tallow and wax, and take an impression on metal with Judea powder or resin, and place the plate in a nitric acid bath of from 15° to 20° Beaumé, or to the action of a galvanic pile. After a biting of about 20 minutes the plate is heated or again inked to protect the feeble parts, and the biting of the acid is continued until the engraving is effected.

Second, engraving in intaglio; drawing on stone with an ink composed of gum, China ink, and acid.—Covering the stone with autographic or lithographic ink, and after the ordinary lithographic preparations, obtaining a design in white, that is to say, a negative, which is transferred to metal, and the engraving of which is in intaglio, by biting or by a pile as above. "A design may be changed from black to white by striking off an impression on paper. The design is covered with pulverized gum arabic transformed to stone, covered with lithographic ink, and washed."

Third, "engraving in intaglio, by reserve, of lace, openwork designs, and others." The design is transferred directly or indirectly, by photography, lithography, or otherwise, and then the metal plate is covered with the following composition:—Gum arabic, Narbonne honey, and distilled water, 5 parts of each, and 2 parts of each of the following substances, namely, natural garlic (essence), fine starch, albumin, ground and mixed into a paste, spread in regular layers on a metal plate. The lace or design is pressed upon this and removed to a scoured metal plate or roller and pressed. The

transfer is effected as in lithography. Blacken by means of a lithographic roller, and then place the metal plate or roller in a bath prepared of rain water 100 quarts, nitric acid 1 quart, sulphuric acid $\frac{1}{2}$ quart, alcohol $\frac{1}{2}$ quart. When galvanic action is produced the design disappears in the bath, and is engraved intaglio. The metal plate or roller being thus engraved copies are reproduced or produced on fabrics, &c. by a hand plate or roller.

Fourth, "negative impression.—To obtain an engraving in "intaglio on metal" draw on a lithographic stone with pencil or pen in lithographic ink the design, and ink the stone by means of a roller with the following composition :—China ink and gum, 5 parts of each ; garlic 2 parts ; honey and ordinary black, 10 parts ; red chalk (sanguine) in suitable quantity. The whole is well pounded and mixed to a paste, an impression is taken and transferred to a prepared stone, and cover it with mineral powder, and ink the stone by a roller with lithographic black, and prepare the stone in the ordinary manner, and the design appears in white ; that is to say, a negative. An impression is taken from it and transferred "to metal in the manner previously described for producing "an engraving in intaglio."

Fifth, reproduction of old engravings by obtaining "a design or an old engraving on stone or metal by known processes of photography and heliography," which is applied "to printing on stuffs by the known means of bichromate of potass or Judea bitumen prepared in darkness with water and gum." It is left to dry ; the design is applied on stone or metal ; it is exposed to light, as in photography, after the operation in the dark chamber ; it is powdered with gold, or plunged in lithographic ink. Obtaining a negative design by plunging a metal in nitric acid. Transferring to metal by lithographic printing the design which has been dipped in a 20 per cent. bath of nitrate of silver, and powdering the plate with gold, or plunging it into Marseilles or other soap water ; designs are obtained on sensitized collodion prepared in darkness, and the design applied to metal is proceeded with as before.

[Printed, 4d. No Drawings.]

A.D. 1865, September 22.—No. 2424.

SCHULTZ, ALEXANDRE.—“Improvements in the manufacture
“of coloring matter, and in the application thereof to dyeing
“and printing.”

“The production of grenat or chocolate coloring matter
“by acting on aniline red with hyponitric acid,” and by
printing or dyeing the fabric or material with aniline red
and then treating it with hyponitric acid. Also “when
“printing or dyeing with the said color, the use in conjunction
“therewith of chlorate of potash or other equivalent oxidizing
“reagent,” as afterwards described. Also “when printing
“with the said color the use of ammoniacal gas for the
“development and fixation upon the fabric of the coloring
“matter,” as afterwards described.

In making the colour, the following proportions are usually
employed:—32 lbs. of fuchsine are mixed with 80lbs. ammonia,
sp. gr. 0.96, and hyponitric acid is passed into the mixture until
it assumes a brown appearance, and “all or nearly all the
“fuchsine is transformed into the chocolate color.” The colour
is collected on a filter, dried, and “sent into the market in the
“form of powder.” The new chocolate colour in a liquid form
is prepared by dissolving 40 parts of fuchsine in 140 parts by
weight of nitro-sulphuric acid, prepared by saturating sulphuric
acid, of sp. gr. 60° Beaumé with hyponitric acid by
passing the gas into it then adding 200 parts of water, and
adding with stirring, little by little, 80 parts of powdered
chalk, and filtering in order to obtain a clear liquid.

“For printing on wool and mixed fabrics the color may
“be prepared” as follows:—Thickening 120 parts of the
nitro-sulphuric solution of fuchsine of the above strength
without heat, with 50 parts of gum senegal, and then adding
10 parts of chlorate of potash.

For printing on cotton, thickening 120 parts of the same
solution with “50 parts of gum senegal,” and adding “2
“parts of red prussiate of potash in powder.” “After
“printing, the fabrics are hung up to dry for 12 hours, then
“they are passed after ageing through ammoniacal gas,
“steamed, and washed; or they are well washed without
“steaming.” “If grenat color in powder is employed,
“then in printing on cotton” 2 ozs. of white starch are dis-

solved in 10 ozs. of water, and $\frac{1}{4}$ ths. of an oz. of chlorate of potash, or the same quantity of nitrate of potash added, and when cold 4 ozs. of a solution of the colouring matter is added, containing at the rate of 1 oz. of dry powder to 3 ozs. of nitric acid (sp. gr. 40° Beaumé) or other acid, and it is ready for printing, finishing, as above. The solution of starch may be dispensed with.

For printing of wool and mixed fabrics, 250 parts of water are thickened with 250 parts of gum senegal, adding while hot 25 parts of chlorate of potash, and after cooling adding 175 parts of a solution of grenat colour prepared by adding at the rate of 25 parts of the powder dissolved "without heat" in 125 parts of acetic acid and 25 parts of hydrochloric acid." "After printing, the fabric is steamed and washed without passing it through ammoniacal gas."

For dyeing cotton, wool, and silk, a grenat colouring matter, soluble in water, is prepared by adding to 160 parts of fuchsine 40 parts of caustic soda dissolved in one hundred parts of water, allowing to stand for 12 hours, then adding 20 parts of nitrite of potash in 100 parts of water, boiling then and adding 400 parts water, boiling up once filtering and evaporating "to dryness in a water bath." Other salts, as the hypochlorite of lime, chlorate and chromate of potash, and others having oxidizing action, may be employed in place of the nitrite of potash.

For dyeing cotton the fabric, &c. is mordanted as follows:—immersing it for five minutes in a very dilute solution of sulphate of copper, the excess of this solution pressed out, the fabric immersed for a quarter of an hour in a tepid solution of catechu bark or tannin, and, lastly, in a hot solution of chromate of potash. The fabric is well washed and dyed hot. To obtain a deep chocolate, sulphate of iron is substituted for the salt of copper. The cloth may be printed with an alcoholic solution of fuchsine to which nitric acid and gum is added and passed through vapours of hyponitric acid and afterwards of ammonia.

[Printed, 4d. No Drawings.]

A.D. 1865, September 23.—No. 2440.

ROLLAND, GUSTAVE EMILE, and ROLLAND, EMILE LÉON.—
"An improved liquid composition for cleansing, scouring,

"and bleaching textile, animal, mineral, and vegetable substances."

"500 parts of soap-wort (saponaire)" are boiled "for about half an hour with 8,000 parts of water," allowed to cool, "86 parts of liquid ammonia of commerce" added, and "the mixture well stirred, or the soap-wort may be distilled instead of boiled." This composition, which is named "eau rolland," is bottled, and is to be used cold." To clean, for example, lace, silk, woollen and cotton stuffs, mix in or about the proportion of four spoonfuls of eau rolland to half a pint of cold water, stir up the liquid, and dip the article in the composition, soap and rinse it, and iron it before it becomes quite dry. Silks thus treated possess the brilliancy and suppleness of new goods, and linen is whitened without being spoiled as in the processes generally followed." "The eau rolland may be applied as a scouring, cleansing, and bleaching agent in the form of a bath, or by means of a cloth or brush or otherwise, and more or less diluted, according to the article to which it is applied."

[Printed, 4d. No Drawings.]

A.D. 1865, September 29.—No. 2501.

SCHOFIELD, WILLIAM, and SMITH, JOHN.—"Improvements in machinery and apparatus for bleaching, soaping, clearing, and washing fibrous and other materials, yarns, and fabrics."

These improvements are, the general combination and arrangement of double acting kiers, and the mode of working them. Forcing liquors employed as above, "upwards through the fibrous and other materials, yarns, and fabrics." The mode "for resisting the upward pressure of the moveable grid used in double acting kiers." "The self-acting valve and the machinery" afterwards described, "or any equivalent machinery for reversing its position;" and "the direct application of steam for forcing the clearing liquor through Turkey red yarns and fabrics" as afterwards described, or "effecting the same object by force pumps or other equivalents."

The kier consists of a vessel closed above and below, but furnished with openings for the admission of goods and materials. Near the bottom is a false bottom, in which a

series of pipes is fixed, which are also firmly attached below to the bottom of the kier, or a single large pipe may be employed; these pipes are perforated close to the bottom; the kier has "a movable grid provided with rods passing through stuffing boxes in the upper portion of the kier, and with retaining catches or other equivalents to resist the upward pressure of the materials against the grid. A pipe is placed immediately under the false bottom communicating with the upper portion of a small cylinder, and the lower end of this cylinder is in communication with the lowest part of the kier. The cylinder bottom stands level with the bottom of the kier, and the top of the cylinder on a level with the false bottom; in this cylinder is a float connected to a weighted chain passing over a wheel or other equivalent for actuating the tumbler lever by which the steam is admitted alternately to the upper and lower portions of the kier. Steam is admitted to the under side of the false bottom and to the upper part of the kier by suitable pipes furnished with a valve actuated by the tumbler lever above referred to. The pressure of the steam acting against the under side of the false bottom and upon the surface of the liquor in the lower part of the kier, forces the liquor through the perforated pipes above described." By these means the liquor is forced alternately upwards and downwards through the materials until the process, whatever it may be, is completed. If it be desirable "at the commencement of the operation to express a great part of the moisture combined with the fabrics or other substances in the kier," steam is admitted to the upper part of the kier, which compresses the materials, thus expelling the moisture, which escapes through a second false bottom, placed above the one first described, and through an off-pipe; and in order to prevent the liquid so expelled from mixing with the liquor for bleaching, soaping, clearing, or washing, the perforated pipe or pipes above referred to is or are prolonged to the under side of the second false bottom."

[Printed, 10d. Drawing.]

A.D. 1865, September 29.—No. 2506.

DE WEWEIRNE, JOHN, junior, and VERSCHAFFELT, ALEXANDRE.—(*Provisional protection only*).—"Improvements " in dyeing."

These improvements are, in place of dyeing a blue color with indigo or "a similar color known as 'false tint,'" produced by other materials, dyeing "the fabric or fibre to a tint " equal to that produced by the ordinary indigo process, and " not to be distinguished therefrom by the ordinary commercial tests, with a much smaller expenditure of indigo." by first applying "a ground tint with a cheaper dye material," and then dyeing "with indigo on the ground tint, which is of " such a nature that it will take the indigo dye over it." In preference, dyeing "in the first instance with a hot decoction " of campeachy wood, having previously mordanted the fabric " or fibre with a mordant consisting of a tin salt, copperas, " bichromate, sulphate of zinc, spirit of salt, chloride of " manganese, and water. Afterwards the fabric or fibre is " dyed in the indigo vat and treated with acidulated water " in the usual way."

[Printed, 4*l*. No Drawings.]

A.D. 1865, October 3.—No. 2536.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Philibert Chevalier*).—(*Provisional protection only*).—"Improvements in preparing red and violet coloring matters for " dyeing and printing silk, wool, cotton, and other textile " vegetable and mineral substances."

"Obtaining two coloring matters, red and violet, from " aniline, toluidine, cumidine, cymidine," as follows:—Aniline is converted into a salt, in preference an arseniate, and " a nitrate, particularly the nitrate of potash," is added to it " in about equal quantities by weight with the aniline," and the mixture is heated in no case exceeding the boiling point of the aniline used, until "the matter produced turns blue on " being revived with acid." "The matter is treated at boiling " point with an alkalinised water which dissolves the red " matter and leaves the violet insoluble." From this solution it is precipitated by a "neutral salt, such as sulphate of soda " and chloride of sodium." "The tints of this red matter

"resemble safflower." "To separate the violet from the useless substances which are with it," the mass insoluble in the alkaline solution is treated with acidulated water, which dissolves the colour, from which solution it is precipitated by neutralization. The two colouring matters are both soluble in water. Toluidine, cumidine, and cymidine, are treated in the same manner as described for aniline.

[Printed, 42. No Drawings.]

A.D. 1865, October 6.—No. 2564.

HOLLIDAY, JOHN.—"Improvements in preparing violet, blue, and red coloring matters."

"The use of nitro-benzole with salt of aniline for making violet, blue, and red coloring matters or dyes," substantially as follows:—In producing a violet, "mixing, say, 56 lbs. of hydrochlorate of aniline of commerce (the aniline of the above salt to be of a low boiling point, say about 364° F.) with about 44 lbs. of nitrobenzole of commerce" (in preference of a low boiling point), and heating this mixture gradually up to say 440° F. for from 5 to 7 hours, testing by taking out small quantities from time to time. The bronzy mass, formed when cold, is boiled for about an hour in about 40 times its bulk of water, and the colouring matter is precipitated from this solution by a little alkali, in preference ammonia or soda, washing the colour well with water, dissolving it in methylated spirit, and purifying it by distilling off the spirit, treating the residue with hydrochloric acid and water, and reducing the residue thus dissolved to a dry body by evaporation, which may be dissolved as is usual with aniline colours. To produce a blue, mixing about 34 lbs. of nitro-benzole, in preference of a low boiling point, with say 66 lbs. of hydrochlorate of aniline, both as free from their homologues as possible, heating the mixture as above. The product is powdered, washed with water containing 10 per cent. hydrochloric acid, then with water, and dried. It is further purified by dissolving in methylated spirit, and distilling off the spirit; the colouring matter is "then dissolved as is usual with other aniline colors ready for the dyer's vat." To produce a red, mixing 75 lbs. of hydrochlorate of aniline, the aniline of which in preference is of a high boiling point, and 25 lbs. of nitro-benzole, in preference of a low boiling point, and gradually heating the

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mixture "to 440° F. or thereabouts," and maintaining it till "the colour is gradually formed in a bronzy paste, which "when cold becomes hard and brittle." Purifying it as in ordinary magenta. The hydrochlorate of aniline is preferred to the other salts of aniline.

[Printed, 4d. No Drawings.]

A.D. 1865, October 7.—No. 2582.

RODDY, JAMES.—(*Provisional protection only.*)—"An improved "washing and cleansing liquor or solution."

This liquor is formed as follows:—taking two parts, by weight, of crystals and soda and one part of unslaked lime, and adding thereto twelve and a half parts of water, preferably boiling water. The crude liquor is allowed to stand until all the insoluble matter has been precipitated, when the clear fluid is poured off or collected. This fluid is "the improved washing "or cleansing liquor or solution." "It can be added to water "in which colourless woven fabrics or fibres are to be washed "in the same manner as other washing liquors."

[Printed, 4d. No Drawings.]

A.D. 1865, October 18.—No. 2686.

SCHOFIELD, WILLIAM, and SMITH, JOHN. — (*Provisional protection only.*)—"Improvements in rollers for washing yarns "and fabrics and for other purposes."

These improvements are, "a series of metal or other discs "mounted on a shaft and covered with a cylinder of india-rubber, or other suitable elastic or yielding material; these "discs are close together, and the hole in their centre is larger "than the shaft on which they are mounted, consequently, "each disc accommodates itself to the thickness of the "material passing under it," the object being "to equalize "the pressure on the fabric or other material by every portion "of the circumference of the roller."

[Printed, 4d. No Drawings.]

A.D. 1865, October 19.—No. 2701.

CLARK, WILLIAM.—(*A communication from Félix Dehaut.*)—"Improvements in printing or impressing and dyeing fabrics "and tissues."

“The application of soluble chromates for the direct production on tissues and fabrics of chrome greens of various hues, either by impressing, printing, or dyeing.” As an example, “take, for instance, phosphate of ammonia and bichromate of potash, or of ammonia in equivalent proportions and dissolve them together in cold water, adding a sufficient amount of glucose or other substance capable of reducing the chromic acid,” “apply this solution, properly concentrated, either by way of impression or by immersion,” and “raise the tissue to a temperature of 212° F. whereby the reaction is determined and the green color made to appear.” “This reaction may be likewise produced at a low temperature but much more slowly.” “Instead of producing the reaction which generates the insoluble salt in the fabric itself,” it may be produced in a vessel, and the same salt may be obtained in a pulverulent state, and capable of being employed or used as common chromium greens.”

[Printed, 4d. No Drawings.]

A.D. 1865, October 20.—No. 2716.

LAVATER, MANUEL LÉOPOLD JONAS, and KERSHAW, JOHN.—“Improvements in the manufacture of covers applicable to drawing or printing rollers, and as endless blankets,”

Employing as “a covering for the rollers used in machinery for drawing fibrous materials, or for printing rollers, tubes, or cylinders, of vulcanized india-rubber coated, or knitted, or woven, or braided, or coiled spirally over with a yarn of fibrous material, producing thus a seamless fabric. The yarn is knitted, or woven, or braided, or spirally coiled around the tube of india-rubber compound previous to its being submitted to the requisite heat of vulcanization, and is so incorporated with it; or the india-rubber tube may be vulcanized before covering with yarn, and in this case the process of vulcanization preferred is that called the ‘cold process.’ The outer surface of the yarn is afterwards glazed or covered with a varnish of oxidizable oil, or a varnish of collodion, or other varnish not affected by water or greasy matters, may be employed.” A tubing prepared as above is “afterwards cut into the requisite lengths for

“ covering the rollers, or to serve as endless blankets. In place of the braiding of yarn being on the exterior of the tube of india-rubber it may be incorporated with the india-rubber tube on its interior surface, or between two layers of india-rubber; the surface is then glazed to protect it from the action of oily or greasy matters.”

[Printed, 4d. No Drawings.]

A.D. 1865, November 2.—No. 2825.

SCHAD, LUDWIG.—“Improvements in the manufacture of coloring matter for dyeing and printing.”

First, mixing together “16 parts of rosaniline, 1 part of sulphate of quinine (the basic salt of the trade), and 48 parts of aniline, or instead of sulphate of quinine, sulphate of cinchonine. This mixture is heated in a suitable vessel for some hours. In using this process the greater portion of the blue is got in the form of base, it therefore requires the addition of a little acid before the color can be judged. The finished semi-fluid mixture is poured into diluted spirit of salt to obtain the blue salt and to take the free aniline out, the blue is at the same time precipitated and boiled out with water and dissolved in spirits of wine ready for dyeing.”

Second, mixing together 2 parts ethylene violet, a colour which is the subject of a previous Patent, No. 2070, A.D. 1865, 1 part of acetate of soda, and 6 parts of aniline or its homologues or mixtures of the same. “This mixture is heated, in preference, at a temperature of 150° centigrade until the desired shade is produced. The finished mixture is washed in diluted spirit of salt to take the free aniline out, and the precipitated color boiled in water and dissolved in spirits of wine ready for dyeing.”

In both these processes, the proportions in which the substances are used above are considered the best.

[Printed, 4d. No Drawings.]

A.D. 1865, November 6.—No. 2859.

PARAF, ALFRED.—“Improvements in printing and dyeing textile fabrics and yarns.”

First, “the use of oxygenous compounds of chlorine more soluble than these combined with potash, as chlorates of

“ soda, ammonia, barytes, strontian, lead, lime, magnesia, alumina, zinc, nickel, copper, chrome, iron, manganese, and potash, when decomposed by hydro-fluo-silicic acid.”

Second, the preparation of the material “to be dyed or printed with a chlorate more soluble than potash for the production of steam colors, as aniline black and its analogues.”

Third, the preparation of the material “intended to receive mordants of iron or tin with a chlorate more soluble than potash.”

Fourth, “a soluble chlorate to replace in all colors or dye liquors the chlorate of potash.”

Fifth, “the chlorate of potash and hydro-fluo-silicic acid mixed in the dye liquid and the coloring matter, where till now a less active acid was used for decomposing the chlorate of potash.”

Sixth, “the addition of a salt of iron, copper, chrome, or manganese, to the coloring matter or dye liquor intended to be printed or put in immediate contact with the fibre or material previously prepared in chlorate of potash.”

Seventh, “the addition of a salt of iron, copper, chrome, or manganese to the coloring matter or dye liquor intended to be printed or put in immediate contact with the fibre or material previously prepared in a more soluble chlorate.”

Eighth, “the preparation of animal matters in salts of copper, or copper and chrome, in order to enable them to take aniline blacks and similar colors, either by dyeing or printing.”

The proportions in which these substances are used to afford good results are given.

[Printed, 4d. No Drawings.]

A.D. 1865, November 10.—No. 2894.

HUGHES, EDWARD THOMAS.—(*A communication from Prosper Monnet.*)—“Improvements in the means of producing from rosaniline blue and violet colouring matters.”

Obtaining “the violet colouring matter by the following processes and the applying of the same to the dyeing and printing of textile fabrics, yarns, stuffs, cotton, paper, and similar materials.” The object is to render “the ordinary violet of rosaniline violet colouring matters soluble in water

"without the use of alcohol;" for this purpose, "into 6 parts
 "of sulphuric acid, monohydrate of commerce (66 Beume) is
 "added in small quantities, and stirring continually, 1 part of
 "ordinary violet of rosaniline," the mixture is heated to 80°
 C., and, when completely dissolved, the temperature is raised
 to 130° C., kept at that temperature for about ten minutes
 and allowed to cool; when quite cold, it is poured into
 several times its bulk or volume of cold water, a partial
 precipitate of violet takes place, and "on neutralizing the
 "sulphuric acid with an alkali or an alkaline carbonate the
 "violet will be completely separated," when it is collected
 on "a filter, washed several times in cold water, and after-
 "wards pressed and dried." "1 part of this violet in a dry
 "and finely powdered state is mixed with 30 per cent. of its
 "weight of dry powdered carbonate of soda or any other
 "alkaline carbonate," water "is added equal to 1½ the weight
 "of the violet employed," the whole is "heated with care
 "until the mixture becomes a glutinous and tenacious mass of
 "a brown color in a very homogenous state," and dried at a
 low temperature is the violet desired. "To obtain a violet of
 "a very red tint the dry carbonate of soda is substituted by a
 "corresponding quantity (according to the chemical equiva-
 "lents) of a fixed alkali, soda, potash," and treating the whole
 as above. Sulphuric acid is employed as a brightening mor-
 dant in place of other acids.

[Printed, 4d. No Drawings.]

A.D. 1865, November 20.—No. 2987.

CLARK, WILLIAM.—(*A communication from Adolphe Pierre
 Viol and Césaire Pierre Dufloy.*)—"Improvements in bleaching
 "feathers."

These are, "bleaching or extracting the color from black
 "or brown feathers" by means of chlorine in a gaseous
 state or "chlorides, chlorites, or chlorates, sulphurous
 "acid, either in solution or in a gaseous state, sulphites,
 "chromates, bichromates, and all kinds of salts and oxy-
 "genated or other acids, or, lastly, by means of alkalies, soda,
 "or potash, all of which means may be employed either
 "separately or simultaneously." "The method furnishing the
 "best result" is "steeping them in a weak solution of azotic
 "acid which contains chromate or bichromate of potash"

until they are bleached, after washing they are "dyed of any color, metallized, or otherwise ornamented as desired."

[Printed, 4d. No Drawings.]

A.D. 1865, November 29.—No. 3059.

DUFRENÉ, HECTOR AUGUSTE.—(*A communication from Jules Weber and Victor Jacques.*)—An "apparatus for stretching and rolling fabrics for dyeing."

This apparatus is composed "of two moveable discs fixed on a driving shaft at the distance required by the width of the fabric, by means of two pressure screws or otherwise, to allow of the change of their distances apart. The discs are composed of solid parts, the transversed form of which is an isosceles triangle slightly truncated, and rounded off at its summit, and disposed in a spiral form, having for origin the centre of the shaft and for limit the periphery of the disc. This spiral arrangement leaves empty parts, the section of which is also that above described of a truncated isosceles triangle, but disposed in an opposite direction." In the truncated summit of the isosceles triangle, a little behind it, are inserted "metal hooks, nails, or spikes forming a curve for taking up and rolling the fabrics. The driving shaft is carried on two bearings adapted to the dye vat, and the apparatus is worked by a handle placed at one extremity of the driving shaft." Before rolling the fabrics they are placed on a stretching roller, the supports of which are jointed so as to permit of varying the distance of the fabric from the point of traction, placed in front of the apparatus. The fabrics are first hooked "to one of the hooks, nails, or spikes of the spiral curve, so placed that the length developed of that spiral from this point to the circumference of the disc shall be equal to the length of the fabric to be placed on it. Two or three nails of each of the discs are introduced into the selvages of the fabrics, then a rotatory motion is given to the apparatus, and the fabric drawn in by this movement unrolls from the stretching roller and is successively taken hold of by all the hooks or nails that follow, so that the fabric when once arranged on the nails forms a cylindrical surface, having for its base the spiral above described, and

“ for its height the distance between the two discs. The
 “ fabrics thus disposed are steeped in the dye vats.”

[Printed, 8d. Drawing.]

A.D. 1865, November 30.—No. 3069.

DUNCAN, ALEXANDER CAMPBELL.—(*Provisional protection only*).—“ Improvements in the treatment of madder for dyeing
 “ and printing.”

Lixiviating the madder “ with water acidulated with certain
 “ acids which do not attack or injure the aluminous, ferru-
 “ ginous, or compound mordants used in dyeing and printing.”
 The acids preferred are “ boracic and arsenious and similar
 “ acids.” The madder is washed “ by mixing it thoroughly
 “ in cold water, then leaving it for ten or twelve hours, after
 “ which there is added to it “ a sufficient solution of the acid
 “ to acidulate the whole. It is then allowed to settle, when
 “ the supernatant liquor being drawn off the precipitate is
 “ ready for use.”

[Printed, 4d. No Drawings.]

A.D. 1865, December 4.—No. 3107.

BOUCHART, LEOPOLD JOSEPH.—“ Improvements in the mode
 “ of applying mineral soda to the scouring and lubrication of
 “ textile matters and machinery, and in the manufacture of
 “ soap.”

These improvements are, in reference to this subject as
 follows:—“ for scouring textile fabrics, silk cocoons, and spun
 “ goods,” making use of a solution consisting of “ 100 parts
 “ or pints of water at a temperature of 25 to 30 degrees
 “ Centigrade, 1 part or 2 pounds of mineral soda, 1 part or
 “ 2 pounds of potash, and 1 part or 2 pounds of the alkali of
 “ urine; both the latter named salts may be replaced with an
 “ equal weight of soda, but with an indifferent result.”
 “ In scouring cloth the same mixture may be employed, or
 “ 5 parts or ten pounds of mineral soda added to 100 pints of
 “ water at a temperature of from 30 to 40 degrees Centigrade,
 “ the cloth must be allowed to remain a sufficient length of
 “ time in the bath to admit of the separation of the oily
 “ substance therefrom, and the heat should be regulated

" according to the necessity of the case and the nature of the grease that has been employed."

The remainder of the processes are dressing and heckling wool, manufacturing a lubricant for machinery, and likewise soaps.

[Printed, 42. No Drawings.]

A.D. 1865, December 4.—No. 3110.

BBOOMAN, RICHARD ARCHIBALD.—(*A communication from Mathias Paraf-Javal.*)—(*Provisional protection only.*)—"Improvements in dyeing, printing, and other operations based on chemical re-actions."

To obtain prussiate of potash from a solution, "wool, or cotton, or calico," are put into a solution of nitrate of the peroxide of iron of a strength " $\frac{1}{2}^{\circ}$ to 10° Twaddle, for example," and then washed directly, or passed "before washing into an alkaline bath, for example, into a solution of soda crystals of $\frac{1}{2}^{\circ}$ to 5° Twaddle," and then into an acid solution of a prussiate; the ferrocyanic acid of the prussiate is fixed on the stuff which becomes blue, and it is washed and treated with potash to convert the prussian blue into prussiate of potash. "To obtain calico dyed black or otherwise, or aniline violet or other analogous color which should not remain on the calicoes under treatment;" "suppose it is required to make violet with chromate," impregnating the calico in a padding machine or otherwise with a solution of chromate (bichromate of potash, for example), and of a salt of aniline hydrochlorate for example," and "treating the calico or other body on which is the precipitate," in preference, "in vessels similar to those employed in bleaching at great pressure, or in the extraction at high pressure of dye woods," taking "the requisite solution for each operation of washing, purifying, and extracting." Instead of a soluble chromate, fixing in the cloth "an insoluble chromate, as those of baryta and lead, and even less soluble, as that of lime," and dyeing with a salt of aniline. It is stated that it is not calico alone which is to be dyed black by chromic acid and aniline, but all substances capable of being dyed. The tone of this kind of dyeing is modified by "submitting the dyed calico to the action of alkaline or acid baths, pure or soapy boiling water." In printing "a mixture thickened with

"bichromates and acids," it is cooled sufficiently. Mixing hypochlorites with thickenings and employing the mixture cold. Reduced indigo solution thickened "oxidates with greater difficulty cold than hot, and so on." "Acid metallic, oxidating, and other preparations affect the doctors and printing rollers of printing machines less quickly when they are cooled." "To purify blues of aniline insoluble in water but soluble in alcohol," dissolve these blues in alcohol and impregnate a suitable substance (cotton fabric for example) with this alcoholic solution; then, after evaporation of the alcohol, the blue is found fixed on the fabric; next, "treat this fabric by water cold, boiling, alkaline, or otherwise, or by any body which will purify the blue, and when the purification is complete," dry "the fabric and extract the purified blue therefrom by alcohol or other suitable solvents." When mineral acids, &c. are in the solutions, in place of using "the substances before mentioned (cotton, wood, and others), among, it is said, a number of substances, "coal, pumice-stone, and amianth" will answer well. This invention "embraces any case where one body can be fixed upon another and become thus more easy to wash or treat; every case where blacks from aniline are made with the acids of chromium, manganese, and iron, upon any substance," and "every case where the production of chemical reactions is stopped, moderated, or impeded by cooling."

[Printed, 4d. No Drawings.]

A.D. 1865, December 4.—No. 3111.

PARAF, ALFRED, and DALE, RICHARD SAMUEL.—(*Provisional protection only.*)—"A new coloring matter for producing scarlet colors upon woven fabrics and yarns."

This colouring matter is made by acting "upon rosaniline or its acid salts with nitrous acid or its salts, using, by preference, the nitrite of soda." In acting with the nitrous gas upon an acid salt of rosaniline a very small quantity of gas gives the "new coloring matter, an excess of gas, producing a greenish blue and a dirty yellow." In acting with nitrous gas upon rosaniline itself, a greater amount can be used without spoiling the colour. The process is as follows:—"Dissolve one pound weight of aniline red or magenta in

six gallons of water, and add to this sixteen fluid ounces of sulphuric acid, and boil;" now "add gradually three quarts of solution of nitrite of soda at 6° Twaddell, and, when all effervescence is finished," "allow the solution to stand and cool; on cooling, crystals of the new coloring matter are deposited; they are soluble in alcohol and alkalies and partially in water."

[Printed, 4d. No Drawings.]

A.D. 1865, December 14.—No. 3236.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Stanislas Vigoureux.*)—(*Provisional protection only.*)—"A new method of and apparatus for regulating the tension of threads in weaving and other operations."

The frame of the loom carries, at one end, the warp beam on which the warp threads are wound and, at the other end, the cloth beam on which the fabric is received; about one third the distance between the cloth beam and warp beam, and nearest to the cloth beam, are two heddles which produce the crossing of the threads, and a little nearer again to the cloth beam is the batten which beats home the fabric at the point where it is formed. Between the warp roller and the heddles is placed a support composed of four rollers carried by a support or arm, which is free to oscillate at a point on a beam at the lower part of the machine. The lower two rollers are fixed to the support or arm and support the threads, and the two upper rollers, which are movable vertically in guides in the arm, press upon the threads by virtue of their own weight. "The threads in passing between these rollers produce friction thereon tangentially and proportional to their tension, and they communicate thereto a rotary motion on their axes and a shifting movement." "It is this movement which may be called a regulating or equilibrating movement." "This new method and apparatus are applicable in all cases where warp or weft threads arranged for warping, printing, or weaving are submitted to variable tension."

[Printed, 6d. Drawing.]

A.D. 1865, December 14.—No. 3238.

PRETTY, WILLIAM.—"Improvements in the manufacture of stays or corsets."

"Stays or corsets are at the present time ornamented by braiding, embroidering, and various other ways," now this invention consists, "in making stays or corsets of fabric on which designs are printed in such manner that each piece when cut out of the shape required for making the stays or corsets, may have upon it a complete pattern suited to the form of the piece so cut out. In this manner neatly ornamented stays or corsets may be made at a cheap rate."

[Printed, 1s. 10d. Drawings.]

A.D. 1865, December 16.—No. 3255.

JONES, THOMAS, and BUCKLEY, JOSEPH.—(*Provisional protection only.*)—"Improvements in the manufacture of bed quilts, table and toilet covers."

"Printing the patterns or designs for colored bed quilts, table and toilet covers on ordinary cotton or other fabrics, either plain, twilled, or figured." In performing this, "the fabric is passed through a printing machine, the printing cylinder of which is of the proper diameter for printing at one revolution the bed quilt or other article to be produced. The surface of the printing cylinder is engraved with a pattern in imitation of the woven fabric hitherto employed in the manufacture of bed quilts, table and toilet covers. By this means the desired effect is produced at much less cost."

[Printed, 4d. No Drawings.]

A.D. 1865, December 19.—No. 3280.

DURAND, LOUIS.—"Improvements in dyeing and printing."

"The effecting the discharge of color from, and the preventing the application of color to fabrics and fibrous materials, which have been or which are intended to be dyed or printed upon with what are known as coal-tar dyes or colors," as follows:—A mixture is made of "finely-divided metal, by preference zinc, which is held in suspension by means of a solution of gum and a solution of bisulphite, by preference bisulphite of soda, and thorough incorporation;" such mixture is applied "either by means of blocks, rollers, or by any of the other ordinary means to the dyed fabrics, tissues, or fibres which are to be operated

“ upon.” When it is intended that the substances “which are
 “ to be printed upon should have figures, spaces, or patterns
 “ left free or uncolored thereon,” such mixture is printed or
 blocked upon them, and when it has become dry the dyeing process
 is proceeded with as is well understood, and when the goods
 are dry they are “subjected to the action of steam, whereby
 ‘ the color is discharged or decolorized. By adding coloring
 “ matter to the discharge a color is obtained according to the
 ‘ nature of the coloring matter introduced in lieu of a white.”
 In addition to the above mixture employing in conjunction
 therewith either a solution of a bisulphate, as bisulphate of
 soda, or “a solution of an acid which does not materially act
 “ upon finely divided zinc at ordinary temperatures, such for
 “ example as arsenious acid ; or mixtures of the above may be
 “ employed,” thickened by gum, &c. “ Good results are ob-
 “ tained when the ingredients” are employed about as follows :
 —75 parts of finely divided zinc, 60 parts of a saturated solu-
 tion of gum, and 15 parts of a cold saturated solution of bi-
 sulphate of soda, all by weight.

[Printed, 4d. No Drawings.]

A.D. 1865, December 22.—No. 3318.

COOPER, JOHN ALEXANDER.—(*Provisional protection only.*)—

“Improvements in the manufacture of yarns, string, and
 “ paper, and in the preparation of dyes, and in dyeing fabrics
 “ by the application of vegetable substances not hitherto used
 “ for such purposes.”

Employing “the stalks and leaves of the French willow
 “ (epilobium)” in the preparation of dyes, and in dyeing and
 “ fixing dyes on fabrics.” “In preparing the leaves of these
 “ plants for dyes, extracts are obtained therefrom as when
 “ preparing other vegetable dyes, and they are used either
 “ alone or in combination with other matters according to the
 “ description and classes of colors desired to be imparted to
 “ the fabrics, and it is found that the extracts from the stalks
 “ of these plants have peculiar powers in fixing the colors of
 “ dyed fabrics.”

[Printed, 4d. No Drawings.]

A.D. 1865, December 29.—No. 3375.

EDLESTON, WILLIAM, and SCHOFIELD, JOHN.—(*Provisional protection only.*)—"Improvements in apparatus for expanding " or keeping fabrics straight in passing into, through, or out " of any machine, or over, under, or upon rollers."

This expanding roller "consists of a round shaft fixed at each end in two arms of a swing frame; also two bosses " with screw grooves therein, fixed one at each end of the " shaft within the arms; and intermediate of these bosses " are four other bosses loose on the shaft, and to enable them " to run freely friction rollers are introduced to bear on the " shaft, and across their circumferences slots are formed " suitable to receive T-headed bolts or similar articles; also " a series of wooden lags or segments suitably formed to cover " the bosses and constitute a roller, which lags are in two " lengths notching into each other in the middle of the roller. " These lags are secured to the bosses by T-formed castings " fixed on the inner surface of the lags, and fitting easily in " the slots." The lags revolve freely round the grooved bosses, and the obliquity of one groove being in opposition to the other causes the lags to separate from each other in the middle, at one part of the revolution, and close again at the opposite part. "The rotation of this roller is produced by " surface contact with the fabric to which it is applied to keep " straight, and the skew grooved bosses are placed in suitable " relative position to cause expansion at the proper time. " The frame is capable of oscillation, and its pressure is " capable of being adjusted by means of chain, pulleys, and " weights, or chain, lever, and moveable weight."

[Printed, 4d. No Drawings.]

1866.

A.D. 1866, January 9.—No. 65.

JOHNSON, JOHN HENRY.—(*A communication from Charles Dyomise Reinfeld.*)—"A new or improved detergent to be used " in the washing or cleansing of wool," "whether in the form " of fleece or manufactured into fabrics."

"This detergent substance is obtained by making a solution of carbonate or salt of soda, and according to the quality of the wool evaporating this solution to a density of 80 to 90 degrees of the alkalimeter. To this solution is added powdered soap 'wort' (saponaire,) in the proportion of from two-fifths to three-fifths of the weight of the solution. The result is a substance resembling vegetable soap," by the use of which the washing or cleansing of wool "may be accomplished with cold in lieu of hot water, whatever may be the temperature of the atmosphere at the time, whilst the natural elasticity of the wool is at the same time preserved." Another advantage in the use of this detergent is its great economy," as regards both the cost of material and the amount of labour required.

[Printed, 4d. No Drawings.]

A.D. 1866, January 10.—No. 84.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Charles Raphael Maréchal and Cyprien Marie Tessié du Motay.*)—

"Improvements in bleaching vegetable and animal fibres and tissues."

First, steeping such substances "in liquors containing in solution acids or metallic salts superoxygenated, such as perchromic, permanganic, tungstic, chromic and manganic acids, and soluble perchromates, permanganates, tungstates, chromates and manganates."

Second, "when on leaving any one of these liquors they are immersed in oxygenated acid water, or in acid baths capable of forming with the persalts or metallic oxides which impregnate them and cover them, a soluble salt less oxygenated, such as a hyposulphate of manganese; for example, when, after having been immersed in a bath of alkaline permanganate, they are steeped in a bath of water charged with sulphurous acid, &c. The fibres and tissues above-mentioned are likewise bleached without alteration, when, after having been steeped in oxygenated acid water, they are immersed in liquors containing in solution acid or metallic salts, superoxygenated or capable of being superoxygenated."

[Printed, 4d. No Drawings.]

A.D. 1866, January 16.—No. 151.

HENRY, MICHAEL.—(*A communication from Antoine Alexandre Pelaz.*)—(*Provisional protection only.*)—"Improvements in

"printing woven fabrics and other materials or substances."
 Printing these "substances with a design, pattern, or device thereon on both sides or surfaces simultaneously. For this purpose a plate, block, or printing surface is used, and by means thereof a device or design is imparted on a sheet, block, or surface of caoutchouc, having a velvete, flocked, or pile surface on its entire upper face (instead of only in the parts forming the device)." The "material to be printed is introduced between the first-named printing surface which is placed uppermost, and the impressed or figured caoutchouc surface which is placed undermost, and pressure being applied the fabric or material is printed on both sides simultaneously with the same design. The proper register is readily obtained by the upper printing surface. Colours may be applied by using printed caoutchouc surfaces prepared as described, one for each colour, the colour being applied at the parts required; and a like colour is applied on the upper face of the fabric. In subsequent operations in many cases fresh colour need not be applied to the caoutchouc surfaces but only on the upper surface, sufficient colour being forced through the fabric to print in colours on the opposite side. When printing rollers are used, the caoutchouc having been prepared as described, and printed with the required device or pattern is placed on a roller, and the fabric is passed between the printing or ordinary roller and the caoutchouc roller." Any waterproof substance, "after having a velvete, piled, or flocked surface formed thereon as described, and being printed as described, may be used instead of the caoutchouc."

[Printed, 4d. No Drawings.]

A.D. 1866, January 20.—No. 189.

GEDGE, WILLIAM EDWARD.—(*A communication from Felix Boutellas-Desmoulins.*)—"Improved preparations of the plant known as the coca to permit its incorporation with confectionary of all kinds, syrups, and liquors, and its use for dyeing."

The following is the method of preparing the coca for dyeing:—"Infuse the coca during three weeks in alcohol at " 85 degrees by 'Baumé's' aerometer (one part coca and " seven parts alcohol), or filter in a displacing apparatus, or " distil the alcohol and the coca in an alembic," this solution is "to be used pure or with water." The remainder of the Specification refers to the use of coca in confectionary, &c.

[Printed, 4d. No Drawings.]

A.D. 1866, January 22.—No. 210.

STRINGER, JOHN, and BIRCH, GEORGE.—"Improvements " in printing yarns."

"These improvements relate " to that method of printing " yarns which is well-known to the carpet trade as Whytock's " system, and where the threads are first wound on to a drum " and afterwards printed upon by means of a color trough " and roller, caused to pass underneath the drum in contact " with the yarns." "According to the present practice of " winding yarns," an uneven surface or ridges are produced, by which "the coloring matter is unevenly distributed, and " some parts of the thread are printed of a darker shade than " others," and to remedy these defects it is proposed "to " combine with the ordinary guide which may have been " heretofore used for conducting the threads on to the drum, " an instrument or finger piece, which is caused to press on " the surface of the coils of yarn which have been already " wound on to the drum, and which at the same time, by " means of a projecting guide piece formed on the under " side of such pressure finger, acts upon each successive coil " of yarn in such manner as to lay it evenly and push it up " alongside of the preceding coil, the projecting edge or " guide piece being bevelled or rounded off in order to ensure " its gathering the thread correctly and guiding and pushing " it up to the required position alongside of the preceding " coil."

[Printed, 6d. Drawing.]

A.D. 1866, January 24.—No. 238.

HINCHLIFFE, GEORGE.—"A machine for 'saving' or cover- " ing the lists or edges of fabrics."

This invention relates to machines to be employed for covering the edges of fabrics to be dyed, to prevent the edges from taking the dye. The preparation of fabrics for this purpose is ordinarily effected by hand labour by first turning or folding the edge over a cord, then a web of close woven fabric is folded over the edge and cord, and is stitched thereon by means of a needle and thread being passed through the fabric and around the web or cover.

The machine for this purpose comprises "a tubular guide
" or guides through which the list or edge of the fabric, with
" the cord and the web or cover, are caused to pass (a slit
" being formed in the guide or guides to allow the fabric to
" pass along), by which the list or edge and web are folded
" on the cord and placed in proper condition and position
" to be secured by thread or cord." "The fabric with its
" list thus folded and covered, is drawn forward intermittently
" by a pair of toothed rollers; a needle attached to a slidable
" bar " "passes thread or cord" "through the fabric close
" to the folded list or edge. On return of the needle a loop
" is formed of the thread or cord, which is caught by a hooked
" carrier having an intermittent oscillatory or partial circular
" motion " "by which the loop is carried around the covered
" list or edge to the contrary side of the fabric and held in
" suitable position for the needle at its next stroke to pass
" through the loop and thus secure it. On the return of the
" needle another loop is formed and caught by the hooked
" carrier (which has also returned), and is again carried around
" the folded list or edge to be secured by the next insertion
" of the needle."

[Printed, 1s. 4d. Drawings.]

A.D. 1866, February 1.—No. 314.

MALLISON, JAMES.—"Improvements in the treatment of
" yarns or threads previously to dyeing them."

These improvements are "the saturation of cops or bobbins
" of yarn with a solution containing tannin matter by means
" of boiling or hot steeping," so as to be "enabled to dye the
" yarn as it passes from the warper's beam to the weaver's
" beam whilst in an extended state." The cops, bobbins, or
" spools of yarn or thread are boiled or steeped in hot solutions
" of sumach, catechu, or other solution containing tannin for

about twenty-four hours. "The strength of such solutions may vary, but, for example, three pounds of sumach may be used to ten pounds of cotton." When the "fibre or thread is permeated and impregnated with the solution, which state of saturation may be ascertained by cutting a cop through the middle and applying to the part cut a solution of iron," the colour will be even and regular from the outside to the centre of the cop. The yarns thus mordanted in the cop is dried; it is then wound and warped on to warper's beams and afterwards passed through the dyeing liquors and size; it is then dried and passes direct in continuous course on to the beam ready for the loom." By this previous preparation the yarn or warp can be dyed "either by mixing the materials together (as in printing), either with or without size, passing the warp through and drying it as it passes to the beam, or the liquors may be kept separate in boxes as in ordinary warp dyeing, and a yarn passed through in the extended state and dried and then passed on to the weaver's beam."

[Printed, 4d. No Drawings.]

A.D. 1866, February 3.—No. 341.

HOLLIDAY, JOHN.—(*Provisional protection only*).—"Improvements in the manufacture of red coloring matter or dye."

"The production of red coloring matter or dye by the use of nitro-naphthaline, binitro-naphthaline, or trinitro-naphthaline, with a salt of aniline or its homologues, preferring the hydrochlorate of aniline of a high boiling point or the hydrochlorate of toluidine." In carrying out this invention, mixing "(about) twenty parts by weight of hydrochloric acid of commerce with twenty parts of toluidine and ten parts of nitro-naphthaline," and heating this "mixture up to 440° Fahrenheit, or thereabouts, until the red dye or colour is formed in a somewhat bronze mass." "The proportions or particular qualities of the ingredients stated" may be varied according to the shade of red required. The dye is purified by ordinary processes.

[Printed, 4d. No Drawings.]

A.D. 1866, February 3.—No. 345.

BAKER, FRANCIS BRYAN.—"Improvements in the process of dyeing and manufacture of textile fabrics."

"The applying of any suitable mordant to those parts or materials of mixed fabrics which have less affinity for the dye than the other parts separately and independently before those parts are worked up into the fabric, for the purpose of facilitating and improving the dyeing of such fabrics in the piece." As an example, when the fabric to be manufacture is composed of cotton and silk or cotton and spun silk (such fabric when woven being intended for black), the cotton in the hank is boiled in a bath of soda and water or soap and water and afterwards drained, wrung, and pressed. The operation of "removing superfluous liquor by the 'hydro-extractor' is termed 'centring' and this term" will be used to denote any means by which this end is accomplished." The cotton is placed in the mordant liquor, usually composed of water and nitrate of iron at about 24° Twaddle," and worked in it for about an hour, when it is laid up, rinsed, centred, dried, made up, and wound for manufacture." "When the cotton thus mordanted is worked with the silk or other material into a fabric," if the material is intended to be dyed in the gum, first scour it with soap and water, rinse and dye in diluted logwood liquor, the cotton becomes dyed, the silk remaining nearly its original colour. The fabric is now treated as if it were wholly silk and is saddened with copperas and blue stone and dyed (with soap) in a logwood and fustic liquor." When it is intended to remove the gum, the fabric is first allowed to remain in a dilute logwood bath, and when the cotton is sufficiently dyed the fabric is centred, afterwards boiled in soap and water, rinsed, and dyed as previously. If the fabric is required to feel heavy, it is first steeped in a tan or sumach liquor, rinsed, saddened with copperas, and dyed in a logwood bath.

[Printed, 4d. No Drawings.]

A.D. 1866, February 6.—No. 357.

GODEFROY, PETER AUGUSTINE, and MOTT, JOHN WILLIAM.—(*Provisional protection only.*)—"An improvement in the treatment of rami or rhea fibre, commonly called and known as China or India grasses."

This invention relates to its preparation for carding or spinning "fibreizing," bleaching, and dyeing.

To prepare the material for bleaching a composition is to be used which is formed of one pound of supersulphate of potash mixed with twelve gallons of water heated to a temperature of about 180° Faht., the fibre being soaked in this mixture for from six to eight hours.

For "fibreizing" the material the inventors direct a mixture to be used which is composed of one pound of Florence oil mixed with two ounces of pure sulphuric acid, this mixture being stirred continually from left to right until it assumes the consistency and colour of treacle, and being then united with from eight to twelve gallons of water heated to a temperature of 200° Faht. the fibre is then saturated with the composition.

To prepare the material for dyeing, it is to be soaked in a mixture composed of one pound of potash dissolved in a gallon of boiling water, and eight ounces of Florence oil added thereto, these ingredients being stirred until the mixture assumes the appearance of "soap lather," and sixteen gallons of water at a temperature of about 180° being then added thereto.

[Printed, 4d. No Drawings.]

A.D. 1866, February 8.—No. 387.

HIGSON, RICHARD EDWIN.—(*Provisional protection only.*)—

"Improvements in the ornamentation of silk and satin fabrics."

"Forming designs of lace or other slight patterns by bending flat surfaced iron on edge into such forms and inserting it into wood, or by raising the device in wood or similar material; such elevations are then to be covered with paint, and the designs thus raised are to be impressed and transferred to the surface of the silk or satin fabric" which is to be made into ties, scarfs, and square kerchiefs."

[Printed, 4d. No Drawings.]

A.D. 1866, February 13.—No. 449.

GILPIN, CHARLES.—(*A communication from Francis Kossuth and Louis Theodore Kossuth.*)—"Improvements in the production of copper or other metallic plates for the purpose of printing therefrom."

Among other applications, the process which forms the subject of this invention is "applicable to the production of "surfaces for printing on calico."

A photographic glass plate, coated with sensitized gelatine, is exposed to light, washed, and metallised for electrotyping by means of an alcoholic solution of nitrate of silver acted upon by sulphuretted hydrogen.

The image on the plate for relieves is a positive image "obtained by transparency through another negative one" (representing the object to be produced in the relieve engraving), on which a striped plate of glass has closely been applied." For "incision engravings," a negative image is taken from the object; this image is grained or shadowed with dots or lines.

The grain may be produced by using a striped glass plate in contact with the sensitive surface; the stripes are made with a diamond point.

In another method of producing the grain, the image of a grain that is already lithographed on paper may be taken on the sensitive surface.

To produce the grain at the same time that the image of the object is taken, a camera is employed that has two opposite object lenses; the images respectively of the object and of the grain are by this means focussed at the same time upon the same plane.

[Printed, 6d. No Drawings.]

A.D. 1866, February 14.—No. 463.

BARLOW, JAMES.—"Improvements in bleaching, dyeing, printing, and sizing cotton and other yarns or threads."

First, "combining in one machine the various apparatus required for bleaching, dyeing, printing, and sizing successively," as follows:—The yarn or thread under operation is first passed from the creel off bobbins or beams through a comb or reed of the ordinary construction, and may be passed through a trough containing water to remove the loose impurities, and then through a solution of chlorine or other bleaching liquid under and over rollers in and above the cistern; it then passes between squeezing rollers, next through rollers in a trough containing water, and afterwards through rollers in a trough containing a mordant or other liquid;

from these it is taken by rollers through squeezers, then over a guide roller from whence it descends into the cistern containing the dye. If desired, after squeezing, the yarn may be taken over a steam chest or other heating apparatus to dry or partially dry it before it is dyed. After passing through rollers in the dye cistern, it is taken by rollers through squeezers and into a trough containing size, &c.

“The operation of printing may also be carried out in the same machine, by introducing the necessary printing rollers and passing the yarn over them, either before the process of dyeing or after it, or instead of it as the case may be.”

Second, “subdividing the troughs or cisterns containing the mordants and the dyes by cross partitions,” “so that the several threads passing through the machine at the same time may be dyed in different colors, or partly left uncolored.”

[Printed, 10d. Drawing.]

A.D. 1866, February 17.—No. 511.

GREENHALGH, JOSEPH. — (*Provisional protection only.*) —

“Improvements in producing ornamental designs in color upon woollen, silk, cotton, and other fabrics.”

These improvements are “to cover and saturate with a solution those parts of the fabric to be left white or undyed (according to the required design), the solution used being such as will resist and protect the fabric from the action of the dye, and is formed of gums, resins, caoutchouc, gutta percha, shellac, or other suitable resins, fats, oils, or thickenings in solution with alcohols, ethers, naphtha, turpentine, wood spirit, methylic alcohol, sulphide of carbon, or any other suitable ethereal spirit or solvent, and after printing with such solution the fabric is exposed to the action of the atmosphere to dry,” and “afterwards passed into a solution of bichloride or nitrochloride of tin,” then washed and dyed. The “dyed fabric is well washed, and afterwards subjected to a hot or cold bath, as may be required, of alcohols, ethers,” &c., for “the purpose of removing the protecting or resisting matter first printed upon the fabric, then the fabric is dried and finished in the usual manner. When the undyed portions of the fabric treated as above described, are to be printed upon” the fabric is first passed

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“ through a stannous solution to prepare it to take the color
“ to be permanently printed upon it after the protecting
“ matter or resist has been removed by the ethereal or volatile
“ bath.”

[Printed, 4d. No Drawings.]

A.D. 1866, February 20.—No. 525.

BARRY, JAMES.—“ An improved dye.”

This invention consists in preparing and employing “of
“ lichen (grown parasitically upon apple and crab trees) for
“ obtaining coloring matter therefrom applicable to dyeing,”
as follows:—The lichen is “first cleansed or freed from foreign
“ matters, dried, reduced to powder, and subsequently mace-
“ rated,” and boiled in close vessels with water until “the
“ extract or matter is produced, which when strained, filtered,
“ or chemically treated, and the whole of the insoluble
“ matters removed is rendered clear and fit for use. The
“ color is brown, and of various shades. By this process any
“ or all of the various descriptions of earths, alkalies, acids,
“ salts, metallic oxides, or other re-agents which may be
“ found necessary for combining with and improving the
“ body or color of the dye may be employed either separately
“ or in conjunction with suitable mordants for fixing the said
“ dye and rendering the same permanent,” in manner as may
be found necessary; “thus the simple solution, independently
“ of other chemical matters, may be applied directly to the
“ cloth by steeping or otherwise.”

[Printed, 4d. No Drawings.]

A.D. 1866, February 24.—No. 571.

LEAKE, ROBERT, and BECKETT, JOSEPH.—“Improvements
“ in machinery for engraving and etching rollers and other
“ surfaces.”

This invention consists in an “application of one or more
“ additional bars supporting the diamond or tracing points
“ to the pentagraph machines hitherto employed for en-
“ graving rollers and other surfaces, these additional bars
“ and tracing points being supported either by standards or
“ cross rails attached or connected to the ordinary diamond
“ bars, and actuated by the same mechanism as the ordinary

“ diamond or tracing points, with the addition of one or more bars connected to the treadle.”

Besides the usual tracing points, the drawings show two additional rows of tracing points. The arrangement of cross rails permits of the action of the treadle being communicated simultaneously to all the rows of the diamond or tracing points.

In a modification of this invention, two cross rails are shown, one on each side of the roller. The requisite lateral motion is communicated to one of the cross rails by means of a bracket fixed to the diamond bar, and this bracket is connected to the cross rail by a joint piece. The object of placing a cross rail at each side of the roller is to allow the levers of the additional row of tracing points to be adapted to either side of the machine.

[Printed, 10d. Drawing.]

A.D. 1866, March 5.—No. 672.

NEWTON, ALFRED VINCENT.—(*A communication from John Jordan Eckel, Isaac Smith Schuyler, and James Waring Gillies.*) — (*Provisional protection only.*) — “An improved process of bleaching.”

This invention, it is said, “is applicable to the bleaching of fibrous substances and fabrics manufactured therefrom, but it is more especially designed for bleaching straw, and flax, and hemp fibre for paper stock.” The fibre or fabric is first washed in a solution of about thirty-six gallons of water, to which is added 10 lbs. of caustic soda or potash and 3 lbs. of chloride of sodium (salt), or an equivalent amount of ox gall. The stock is boiled in the liquid for about thirty minutes, the liquid is expressed, and saved for repeated use, and the stock washed in clean or pure water. “The bleaching is effected as follows:—To thirty-six gallons of water add of chloride of lime about 15 lbs., and of sulphuric acid about 18 oz. The acid is to be added gradually. The bleaching liquid is to be well stirred, and the cleansed stock or fibre placed therein in small quantities at a time, say, twenty pounds of the stock or fibre being kept submerged.” Hydrochloric and other acids may be used in place of sulphuric acid, “and for the alkali wash liquid potassa may be used instead of the caustic soda, and spirits of ammonia instead of the

"spirits of wine," about in the same proportion. "The liquid potassa admits of the solution being used cold," and is a saving "in time and avoiding the expense of furnaces and boilers."

[Printed, 4d. No Drawings.]

A.D. 1866, March 10.—No. 732.

PHILLIPS, GEORGE.—"Improvements in preparing purple and blue colouring matters."

Taking "rosaniline or any suitable salt of rosaniline, such as the hydrochlorate or acetate," and mixing it "with the acetate or other suitable salt or oxide of the following substances, as lead, copper, zinc, silver, iron, cobalt, strontia, baryta, magnesia, lime, alumina," preferring those of lead and baryta, adding aniline, and when the whole is well mixed together, adding acetic, benzoic, or other suitable organic acid, acetic preferred, then heating "the mass until the desired purple or blue color is formed." The following proportions "answer well for lead and baryta, and will produce successful results with the rest of the substances named." "Take one part by weight of litharge or protoxide of lead, and two parts of aniline," and "mix them well together, and then add sufficient acetic acid to form a thick, pasty, and nearly solid mass of the two salts formed;" to this add "one part by weight of rosaniline or hydrochlorate or acetate of rosaniline, and heat the whole together up to a temperature from 340° to 370°, but not to exceed 400° F., when the color will be produced." The time required to produce the colour depends on the mass to be acted on; with small quantities about one hour is sufficient. The blue requires a longer time than the purple. To purify the mass, for a pure blue, when lead is used, "dissolve the mass in acetic acid, and dilute with water, and boil until all the lead and red and purple color are dissolved out, and the blue is precipitated." When baryta is used, the mass is treated with dilute hydrochloric acid, and boiled until the red and purple colour are dissolved out and the blue colour precipitated, which may be collected and will be fit for dyeing when dissolved in acetified methylated spirit, &c. By varying the above proportions and temperatures "any desired shade

“ of color, from a red mauvé to a deep blue violet or nearly pure blue, may be obtained.”

[Printed, 4d. No Drawings.]

A.D. 1866, March 17.—No. 793.

DANCER, WILLIAM.—(*Provisional protection only.*)—“ Improvements in dyeing and printing textile fabrics or yarns.”

“ The well known aniline dye ‘magenta’ and other similar colors,” or salts of these colours, are reduced, and leucaniline and similar bodies are obtained, and they or their salts are acted upon by means of acetic aldehyde, acrolein, or other aldehydes or mixtures of the same. These new colours, purple and blue, which are produced, “ may be printed upon the textile fabrics or yarns, and afterwards submitted to the action of bichromate of potassium, or other oxidizing agents of a similar kind.” “ Violet blues may also be produced by the oxidation of the compounds obtained by acting in leucaniline,” by means of iodide of ethyl, iodide of isopropyl, aniline, and benzoic, and similar acids in a similar manner to that employed for their production from rosaniline or its salts. The proportions used are about as follows:—For one gallon of colour take the amount of leucaniline obtained by reducing four ounces of rosaniline or magenta, this is boiled for about five minutes “with three ounces of aldehyde, precipitate with caustic soda or lime, and dissolve the precipitate in one gallon of dilute acetic acid.”

[Printed, 4d. No Drawings.]

A.D. 1866, March 20.—No. 824.

KIRKHAM, THOMAS NESHAM, ENSOM, VERNON FRANCIS. and BROOK, HIRAM.—“ Improvements in apparatus for scouring, washing, bleaching, dyeing, and drying fibrous materials in the raw and manufactured state.”

The materials to be operated upon are placed in a cylinder having a perforated plate near the bottom, this cylinder being enclosed within a second cylinder, and the two resting upon a third and lower cylinder, the whole being surrounded by an external casing, lagged or covered with wood.

When fibrous materials are to be acted upon, they are placed in a "reticulate basket or holder," resting on the perforated plate mentioned above, certain perforated tubes being fixed over the perforations of the plate by the aid of hollow nipples, and these tubes extending into the material in the holder. This being done, the cylinder is closed, and a vacuum created therein, either by the admission of steam which expels the air, or by passing a blast of steam through a pipe connected to the upper part of the cylinder, such blast withdrawing the air therefrom.⁴ In the first case, the steam is condensed by the admission of a scouring or other solution, this solution being admitted from a cistern, and passing either upwards into the inner chamber through a pipe in the bottom of the latter, or downwards through a pipe near the upper part thereof, such solution thus proceeding through the material either upwards or downwards, or both, the apparatus being furnished with pipes and stop-cocks so contrived that the solution may be driven through the fibrous material in one direction only, or backwards and forwards as often as desired, being finally returned to the cistern by the pressure of "filtered steam."

In treating yarns or manufactured goods, they are wound upon perforated hollow spindles, bobbins, or rollers, which are then placed upon the nipples already mentioned, and in all cases the drying of the material or fabric is effected by first introducing steam into the space between the first and second, as well as into a coil of pipes in the third and lower cylinder, and then causing a current of air to pass through the lower cylinder and upwards through the space between the cylinders and the outer casing, this air becoming heated in its passage from the radiation of the parts now heated by steam, and entering the inner cylinder through a pipe at the upper part thereof, down through the material in that cylinder, and finally out of the apparatus through the blast pipe mentioned above, which is also used to create this current of air.

In cases in which the material to be dried will not be injured by the application of filtered steam, such steam may be employed to effect the drying. The solutions used will vary according to the effect which it is desired to produce upon the material, the inventors stating that by the arrangements described all the processes of scouring, washing,

bleaching, dyeing, and drying may be performed in continuous and consecutive order without the necessity of removing or handling the material treated until the processes are completed; water is finally introduced into the apparatus when it is necessary to remove any impurities or organic matter which may have been left in the material.

[Printed, 1s. 4d. Drawings.]

A.D. 1866, March 26.—No. 887.

RAMAGE, JAMES, and NELSON, THOMAS.—“Improvements in the production of blocks and plates for printing.”

A solution of bichromate of potash mixed with gelatine dissolved in a very little water, or other similar preparation, is poured upon a sheet of suitable material, and when dry exposed under a negative of the drawing, engraving, or print for a given time, it is then immersed in water till the parts not acted on by the light swell up to the desired extent. The surface water is then removed, and a solution of gutta percha, bitumen, and wax, or other such materials is poured over the surface, forming a skin thereon. The back of this skin is then filled up to a proper thickness, with melted wax or other materials, and when set, the mould thus produced is separated from the gelatine, and electrotyped, or a stereotype cast is taken.” For a copper or other plate, a transparency of the drawing, engraving, or print is used, and the same processes gone through, the only difference being that a positive of the design is employed in place of a negative; and employing “by preference a photographic positive on glass.”

[Printed, 4d. No Drawings.]

A.D. 1866, March 27.—No. 893.

GEDGE, WILLIAM EDWARD.—(*A communication from Adolphe Benjamin Albert François Joseph Lepoutre-Pollet.*)—“The application of metallic substances upon textile materials in the state of thread.”

“When the thread is in hank it is arranged as if it were to be printed,” and the metallic substance is deposited or fixed to it by the same means as those used for “applying metal on a manufactured fabric.” The thread is then spooled, and is used “either as warp or woof, or as simple thread.”

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A better and more regular result is obtained as follows:—A warp is made from the thread, and arranged and metallized as above. “When the application is dry the warp is arranged “ on the weaving loom in the ordinary manner. The wooden “ rods which are between the harness and the roller carrying “ the warp effect the ungluing of the threads, the workman “ aiding with his hands. After the warp has passed through “ the harness and the comb or stay rod, it may be immediately “ woven.” “It may also without being woven be rolled on “ the cloth beam or roller which habitually carries the fabric, “ and by this latter means a warp is obtained, each thread of “ which is isolated from its neighbour, and it is then only “ necessary to unspool the warp, that is to say, put it in “ hanks, in order to use it in any desired manner.”

[Printed, 4d. No Drawings.]

A.D. 1866, March 27.—No. 897.

HIGGIN, JAMES.—“Improvements in dyeing and printing “ textile fabrics and yarns.”

In the Provisional Specification, these improvements are said to be the production of “black and other shades from “ aniline, by the use of chromates or chromites of metals “ along with other agents,” as follows, adding a solution of “ neutral chromate of potash or soda to a solution in water of “ a salt of copper, such as sulphate,” taking the precipitate, dissolving it in dilute ammonia, and impregnating with this green solution “the yarn or cloth, by padding or otherwise, “ and squeeze out and dry, and as the ammonia evaporates, “ the chromate of copper remains fixed;” or chromate of copper may be produced on the goods by first saturating them with a solution of salt of copper, and afterwards with a solution of neutral chromate of potash or soda, then washing and drying; these goods are then treated with a solution of an aniline salt, “by preference, the hydrochlorate, squeezed “ out and dried, hung up to age for a day or two, then rinsed “ in water, to which may be added an alkali or alkaline “ salt, such as hypochlorite of lime or soap.” An admixture of chlorate of potash with the salt of aniline, where an intense black is required, is advantageous. When inconvenient to prepare the goods with the chromate of copper or other metal, *such a mixture* is made “as will produce the same result by

" the gradual reaction of its ingredients," for instance, to a solution of sesqui-chloride of chromium and a salt of copper, adding an alkali, " filtering the resulting chromite of copper " to a paste or pulp." Some of this is taken and mixed with " a solution of salt of aniline, by preference hydrochlorate, " and about as much chlorate of potash as of salt of aniline," then pad the goods with this, or it is previously thickened with gum, &c., and print on the cloth, &c., age, as before, rinsing in water, to which may be advantageously added an alkali or an alkaline salt.

In the Final Specification, the inventor says, that since his Provisional Specification, he has found "that the use of " insoluble chromate has been proposed in a patent previous " to the date of this patent," and he makes no claim thereto. " By printing, however, with a color so composed of aniline salt and other ingredients, that although there is no chromic acid or chromate present at the time of printing, by subsequent ' ageing ' or hanging up for a day or two, chromic acid is developed gradually," and " the chromic acid as fast as it is formed reacts on the aniline, thereby forming a " dark green color which on passing through an alkaline " solution becomes jet black, and is found to be firmly fixed " in the fibre." This gradual reaction, due to chromic acid in a nascent state, is said to constitute this invention, and the way in which this is carried into effect is as follows:— Making " a mixture of oxide of chromium with one or more " oxides of metal, which are easily reducible to a lower state " of oxidation, and are capable of attracting oxygen easily " again." The metals " found most useful for this purpose " are arsenic, iron, and copper, this mixture of oxides is added " to a color composed of hydrochlorate of aniline and chlorate " of potash suitably thickened, with which print on cotton " fabrics, and after ageing rinse in on alkaline solution." The mode of making some of the oxide mixtures which have been found useful are given.

[Printed, 4d. No Drawings.]

A.D. 1866, March 28.—No. 904.

JAEGER, ADOLPHE ANTOINE.—(*Provisional protection only*).—" A new process for obtaining aniline yellow."

In using "commercial aniline which is a mixture of toluidine and aniline," take 100 parts of chlorhydrate of aniline, which mix with 40 parts water, and to this mixture add "40 parts of liquid nitrate of mercury," stir well together, and let them settle for 24 hours, two layers are formed; the upper "is of a flaky light orange yellow colour, almost entirely soluble in boiling water, and is boiled twice" with 500 parts of water, the boiling liquid decanted, the colouring matter precipitates from it on cooling, and is collected on a woollen filter, and dissolved "with its treble weight of methylated spirit (or spirit of wood); this solution serves to dye silk or wool of a fine golden yellow." The lower layer "is of a deep brown yellow, not soluble in boiling water, but soluble in alcohol, spirit of wood, or acetic acid," which solutions are used to dye and print cotton, wool, and silk of an orange yellow. "The upper layer is principally formed of pure aniline, whilst the inferior layer principally contains toluidine." Instead of chlorhydrate of aniline, the sulphate or nitrate may be employed as above, "either of which gives with the assistance of nitrate of mercury very fine yellow hues."

[Printed, 4d. No Drawings.]

A.D. 1866, March 31.—No. 925.

JOHNSON, JOHN HENRY. — (*A communication from Justin Henry David.*)—(*Provisional protection only.*)—"Improvements in bleaching books, engravings, paper, cotton, and other similar articles and substances."

These improvements are, "as applied to books, for example," placing them "in their entire state, and without the necessity even for opening the leaves, in a closed chamber, by preference of glass, into which chamber chlorine gas obtained in the well-known manner is introduced for about 8 hours, which has the effect of restoring their white appearance." They are then removed from this chamber and placed in another, and "left for about 24 hours under the action of ozone," "obtained by placing in a leaden dish a small quantity of water, in which pieces of phosphorous (previously treated by immersing them in boiling water for 12 hours) are introduced," which "insures their non-ignition at considerably higher temperatures than would be necessary to

"ignite the same substance in its ordinary condition." The ozone is produced by passing a current of air over the prepared phosphorus, and "the air thus charged with ozone is directed into the chamber with the books to be bleached, and which have already been submitted to the action of chlorine gas." Other means may be used "for preparing ozone, as for example, by the aid of a solution" of 2 parts by weight of peroxide of manganese and of chlorate of potash, 4 parts by weight of water, and passing through the same a current of carbonic acid gas "until the liquid crystallizes and assumes a deep red tint; these crystals are then brought in contact with six parts by weight of sulphuric acid, whereupon they discharge ozone in large quantities." A good result may be obtained by having an intermediate bath of sulphuretted hydrogen. Where a very white colour is not required, ozone may alone be used.

[Printed, 4d. No Drawings.]

A.D. 1866, April 2.—No. 938.

GUÉTAT, ANTOINE LOUIS MARIE.—(*Provisional protection only.*)
—"An improved process for obtaining colouring matters from aniline."

Adding to aniline in its natural state "a small quantity of benzoic acid or other substance, such as an ammoniacal base (ammoniacoux radicoux), in fact any substance which will produce or facilitate the reaction." 10 per cent. of benzoic acid is found to be a good proportion. The substances may then be slightly warmed, if desired and mixed in equivalent proportions with "any mineral acid, such as sulphuric, nitric, hydrochloric, arsenic, or other acid, which will combine with the aniline," but the aniline should be slightly in excess. "The mixture should then be heated until the required shade of violet or blue is obtained. The colour when obtained is purified by the ordinary well-known means."

[Printed, 4d. No Drawings.]

A.D. 1866, April 5.—No. 968.

JAEGGER, ADOLPHE ANTOINE.—(*Provisional protection only.*)
—"A new process for obtaining aniline red."

"Using as oxidizing matter" the "new aniline yellow color" obtained as described in No. 904, A.D. 1866, by

diluting one part of the color in five parts of cold water; filtering away this solution there remains a thick pulp which is afterwards submitted to strong pressure to dry it as much as possible, and mixed "in equal proportion with some rectified " aniline in a stew pan of enamelled iron or any other suitable " vessel," which is hermetically closed and submitted for " three to four hours to a heat of 270° F. (150° C.), after which " delay the reaction is complete," and a fine red colouring matter is obtained, which is boiled repeatedly with chlorhydric acid mixed with water. The solution so obtained is treated with caustic soda, and the red colouring matter which is precipitated is collected and dissolved in " alcohol or methylated " spirit, serves to dye and print in a red color silk, wool, " cotton, and all stuffs capable of being dyed and printed."

"Another fine red colour" is obtained "inclining to the " poppy colour" from this aniline yellow colour, which is named "Victoria pink, to distinguish it from the other aniline " red colours," by mixing one part of the yellow colour with " one part of rectified aniline and five parts of arsenious acid. " As O_3 , and by heating this mixture for four hours to a heat of " 270° F. (150° C.);" the colouring matter obtained is treated as above. "By varying the proportions of rectified aniline " and arsenious acid," a great variety of red colours are obtained "that differ from each other by their yellow hue " being more or less apparent."

[Printed, 4d. No Drawings.]

A.D. 1866, April 9.—No. 1009.

WEATHERDON, BALDWIN FULFORD.—(*A communication from Jean Pierre Caminade.*)—"Improvements in treating lucern " root for paper-making and weaving purposes as well as in " abstracting soda salts and coloring matters therefrom."

According to this invention, the roots of the lucern plant are crushed between rollers in order to expel the sap therefrom, they are then dried, and are next "submitted to any " retting or macerating process in like manner to hemp and " flax for the purpose of disintegrating heterogenous sub- " stances;" the fibrous parts thus obtained are then bleached in the usual way and used for spinning, weaving, and paper-making purposes.

Soda salts or kelp, picric acid, and "a new coloring matter called luzerine, from which green and yellow colours are produced," are obtained "by treating the said roots and setting them in boiling water heated by steam," and "successively evaporating the washing waters."

[Printed, 4d. No Drawings.]

A.D. 1866, April 14.—No. 1063.

LEGGE, RICHARD BRABASON.—(*A communication from Pierre Courmons.*)—(*Provisional protection only.*)—"A new or improved mode of printing patterns on dyed silks and all kinds of dyed goods."

"The material to be printed is stretched on a padded board and secured at both ends. A second padded board covered with oil cloth is coated with flatted paint; varnish is laid on over the paint. A block formed of carved wood and metallic pins of any design is then coated with the paint and varnish. When equally covered, the block is pressed by hand upon the material, after which a careful slow drying by means of stoves to prevent the pattern spreading. When dry the material must be passed through a cylinder for the purpose of pressing. The paint used for coating the blocks may be mixed with any color by means of the ordinary tints used in dyeing, all of which are in a liquid form."

[Printed, 4d. No Drawings.]

A.D. 1866, April 18.—No. 1093.

GIRARD, CHARLES ADAM, and DE LAIRE, GEORGE.—"Improvements in the preparation of diphenylamine and analogous substances."

"The preparation of diphenylamine, ditolylamine, and phenyltolylamine by the action of hydrochlorate or other salt or compound of aniline or its homologue on aniline or its homologue," as follows:—1 part of pure hydrochlorate of aniline, and 2 parts of pure aniline, or thereabouts, are introduced into a suitable closed vessel with a weighted valve, and heated under a pressure of from 3 to 5 atmospheres for about 10 hours. The temperature in the vessel is about 265° to 280° C. The aniline reacts upon its hydrochlorate, producing diphenylamine, to purify which

the mass is treated with rather more than an equivalent of strong commercial hydrochloric acid, slightly heating it to (about 40° to 60° C), adding 20 to 30 times the water to acid employed, the untransformed aniline and some coloured products remain in the liquid, which is decanted from the diphenylamine, which is washed in water, and "dried at the ordinary temperature of the air, as it easily fuses. In this state it is always colored." The simplest method to purify it is to distil it in an iron retort. But it may be purified by dissolving it in benzole or heavy petroleum spirit, decanting the solution from the impurities, and distilling off the solvent. "Ditolylamine may be similarly obtained" by the action of toluidine or its hydrochlorate; or again, phenyltolylamine, by the action of toluidine on the hydrochlorate of aniline or of aniline on the hydrochlorate of toluidine. In the case of ditolylamine, the heat in the converting vessel should be continued for a somewhat longer time, say for 12 in place of 10 hours, or a somewhat higher pressure may be used. With this exception, the processes for production and purification are the same as above for diphenylamine. To prepare blue coloring matter from commercial diphenylamine, it is preferred to employ the process described in No. 2686, A.D. 1866.

[Printed, 4d. No Drawings.]

A.D. 1866, April 19.—No. 1107.

NICHOLSON, EDWARD CHAMBERS.—"Improvements in the manufacture of blue coloring matters suitable for dyeing and printing."

The manufacture of blue colouring matters suitable for dyeing, &c. by treating "regina purple" with aniline as follows:—Mixing one part by weight of "regina purple" in a solid form with about two parts of commercial aniline, and subjecting the mixture to a temperature of about 360° Fahr.; it is kept at this temperature "until a sample when dissolved in spirit acidulated with acetic acid appears of a beautiful blue shade. The process is then complete." The operation may be conducted in an open vessel, avoiding the rapid boiling away of the aniline. From half-an-hour to one hour will usually be the duration of the operation. "The mixture when cool can then be dissolved in methylated spirit acidulated with acetic

" acid, and used directly for dyeing and printing in the same way as the ordinary aniline colors are employed." Or the mixture, after heating, may be subjected to a current of steam for recovering any excess of aniline remaining in the mixture, and the blue dye which remains "can be treated according to a former patent," No. 1857, A.D. 1862. By aniline is meant aniline and its homologues.

[Printed, 4d. No Drawings.]

A.D. 1866, April 26.—No. 1174.

PARAF, ALFRED.—"Improvements in printing and dyeing textile fabrics and yarns."

"The use of insoluble binoxide of chromium or insoluble or soluble chromate salts capable of evolving chromic acid either slowly in presence of water or certain acids or alkalies, or simply by ageing or steaming," "in the production of aniline or its homologues black or grey colors." The following proportions have given very good results:—First, 12 ounces of chloride of aniline, 3 pounds of water, and 1 pound of starch are boiled together; secondly, 8 ounces of brown binoxide of chromium in paste, 4 ounces of chlorate of potash to one gallon of thickening." "The color for printing is a mixture of one part of the first to one part of the second:" but if it is wanted to dye or print very heavy objects, it is easy to produce "the necessary quantity of binoxide of chromium in the fibre by padding or dyeing first in a solution of a sulphate or chloride of chromium, and then passing the goods through a solution of monochromate of potash, then dye in a salt of aniline. The chlorate hastens the production of the color, but the binoxide of chromium and the salt of aniline can be used alone, and give very good blacks." But there is "an advantage in introducing in the color from 3 to 5 per cent. of arsenic acid, which in this case assists the decomposition of the binoxide of chromium." Among the chrome salts which may be used as above, are "chromate of copper, chromate of chromium (herein-before called binoxide of chromium), chromate of sesqui-oxide of iron, dichromate of lead, and similar salts, and as soluble salts, the chromate of chromium and manganese, chromate of manganese, and similar salts."

[Printed, 4d. No Drawings.]

A.D. 1866, April 26.—No. 1176.

PARAF, ALFRED.—(*Provisional protection only*).—"Improve-
ments in printing and finishing all materials where ultra-
marine colors are used."

"Preventing the ultramarine colors, being destroyed by
acids, acid salts, or other bodies, either in the finishing
process or in the state of color to be printed upon textile
fabrics, or to be used for tinting in blue papers or other ma-
terials," by introducing in the finish containing ultramarine
colors or in the ultramarine color to be printed, saccharates of
alkalies, using by preference the saccharate of lime, which
in this case not only neutralizes the acids, but also prevents
oxydation and fermentation either of the thickening matter
used in the color or of the starch, gum, or other materials
used in the finishing process. The quantity of saccharate
of lime will vary according to the quantity of acid or acid
salts contained in the finish or color; but according to
such variations from 5 to 12 or 15 per cent. may be
used."

[Printed, 4d. No Drawings.]

A.D. 1866, May 4.—No 1276.

RÖDERS, AUGUST.—"Improvements in the manufacture of
felt carpets."

"Take six pounds of strong boiled linseed oil, six pounds of
lampblack, and two pounds of chalk well ground and mixed
together. This mixture is evenly spread over the back side
of the felt by hand, and with the same instrument as is
used in the manufacture of floor cloth; the piece is left three
or four weeks in the air to dry, and the right side is printed,
steamed, washed, and dried in the same manner as with
other felt carpets; then the back is rubbed off with pumice-
stone and varnished over with suitable oil color." The
cementing composition may be prepared "by mixing
together one pound of strong boiled linseed oil and two
pounds of chalk, and combining therewith suitable coloring
matters, earths, or pigments, to produce any desired color."
The cementing composition can also be applied on the back
of a printed and finished felt carpet or drugget. On the
back of the carpet, prepared in the above manner, patterns
may be produced by printing or painting or by embossing

“ by passing the carpet between suitable rollers properly engraved.” Instead of linseed oil and chalk, &c. any other cementing material may be used as above, as “size, paste, or gum, either alone or mixed with chalk, whitening, and other materials.”

[Printed, 4d. No Drawings.]

A.D. 1866, May 10.—No. 1340.

HOLLIDAY, READ.—(*A communication from Heinrich Minhorst, and Friedrich Wilhelm Schultes.*)—“Improvements in obtaining green coloring matters of various shades for dyeing and printing.”

The product resulting from the heating of the iodine or bromine derivative with rosaniline or a salt of rosaniline and an alcohol “in closed vessels to a temperature of from about 212° to 250° F. for from 3 to 8 hours,” containing various shades of violet, is “taken from the closed vessels and dissolved in hot water, and this solution (instead of being acted on only to recover the iodine as usual) is treated for purification with a diluted alkali or a solution of an alkaline salt, by preference acetate of soda to precipitate foreign matters injurious to the green or blue green coloring matter remaining in the solution. This solution when cold is carefully filtered, and is a coloring matter or dye not hitherto used for dyeing and printing. To obtain a green or blue green the heat, instead of being stopped at 3 to 8 hours is continued for 18 hours or longer.” The green or blue green colouring matter is also produced from the above-mentioned violet matters “by heating them in a closed vessel at about 212° F. (or it may be somewhat higher), with about their own weight of iodine or bromine derivatives,” the iodides or bromides of the alcohol radicals preferred, and “by preference with about twice their weight of alcohol or wood spirit for a length of time according as a green or blue green dye is required.” The resulting product is dissolved “in hot water and then purified as before stated with a solution of a salt of an alkali, preferring for the purpose acetate of soda.” The insoluble mass remaining will be found to be a blue or blue green dye to be dissolved in acid or alcohol according to the purpose it is to be applied. “In using these dyes the water should be as free from lime as

" possible; a little oxalic acid will be found useful in the dye bath."

[Printed, 4d. No Drawings.]

A.D. 1866, May 22.—No. 1440.

NEWTON, WILLIAM EDWARD.—(*A communication from Albert Wever.*)—(*Provisional protection only.*)—"Improvements in machinery or apparatus to be employed in dyeing yarns."

These improvements are "to facilitate the operation of dyeing yarns, by causing the yarns to be carried or passed through the chemical solutions in a regular and uniform manner by mechanical means instead of by hand labour." The hanks of yarn are placed upon rotating bobbins which are mounted on the ends of horizontal shafts to which a slow rotary motion is given by suitable gearing actuated from the main driving shaft; below the bobbins is placed a vessel containing the dye, oil, liquor, or other liquid into which the hanks of yarn dip. When the hanks have absorbed a sufficient quantity of the dye or liquor, the attendant takes them from the bobbins and places them on a travelling endless apron upon which they are carried between a pair of elastic pressing rollers; the liquor pressed out falls on to an incline and runs back into the vessel.

Another machine is described for submitting the hanks to the alum and gall solution. In this machine there are "a series of horizontal bobbins on which the hanks are placed so that as the bobbins rotate the yarn may dip into and be carried through the chemical solution." The bobbins are mounted in bearings in a reciprocating frame moved by the piston of a steam cylinder; driving bands pass round pulleys on the shafts of the different bobbins. "On the shaft of one of the bobbins is mounted a ratchet wheel, into the teeth of which takes a pawl or click at the end of a vibrating lever which rocks on a stud fixed in the framework."

[Printed, 4d. No Drawings.]

A.D. 1866, June 2.—No. 1537.

PARAF, ALFRED.—(*A communication from Mathias Paraf-Javal.*)—(*Provisional protection only.*)—"Improvements in dyeing, printing, and other operations based on chemical reactions."

The examples given are as follows:—"In order not to lose the prussiate of potash contained in a bath," in place of crystallizing it out, or throwing it down by a salt of iron, washing the precipitate and decomposing it, &c., which operations it is said are "long and expensive," the oxide of iron is fixed upon any substances which wash easily, such as wood (wool?) cotton, or calico," and these are dyed in the solution containing the prussiate which is wanted, washed, and decomposed in a solution of potash. In like manner cloth prepared in tannic acid absorbs alkaloids from liquids, as strychnine, quinine, &c. and these alkaloids are obtained from the cloth by "decomposing or distilling afterwards with an alkali." In another case in the manufacture of aniline mauve, either by chromates, permanganates, or similar salts, there is a great quantity of black precipitate found which has to be separated by washing from the mauve coloring matter. Not only this black is almost of no value, but the washing forms a very long operation." This is overcome by fixing in the fibre chromate, permanganate, or similar salts, and then dyeing in a salt of aniline both black and mauve are fixed in the fibre." The brown is removed by washing first in an alkaline water; on boiling the fibre in a high pressure apparatus with "alcoholized water" the "only pure mauve" is dissolved, and "the black remains fixed in the fibre. Oxide of manganese and manganese salts are employed in like manner." "The same process of precipitating in the fibre" is used "for the purification of aniline blues." Extreme cold is employed (the freezing machine of M. Carré) "to moderate or prevent chemical reactions." And, in passing cloth or yarn through a mixture of chromic acid and aniline salt thus kept cold, it remains of a lemon yellow colour, but when it comes out of the liquid the fast black is found insoluble in the fibre. Thickened chromic acid, a resist upon Turkey red or thickened hypochlorate of lime, a resist upon indigo, not kept in the usual temperature keep any length of time in the cold state. Plaster and water and all kinds of cements, &c. remain soft. Also lactarine is undecomposed by lime or strong alkalies when below zero.

[Printed, 4d. No Drawings.]

A.D. 1866, June 19.—No. 1642.

PARAF, ALFRED.—"Improvements in fixing coloring matters
"on textile fabrics, yarns, or other materials."

Applying arsenious acid, especially when combined with
alumina, for fixing aniline colours as follows:—

First "dissolve one part of arsenious acid in one part of
"glycerine."

Second, "prepare acetate of alumina in the usual way, but
"use sulphate of alumina instead of common alum," then add
from ten to twelve per cent. of each of these solutions to any
aniline "color thickened with starch, print and steam half an
"hour." After steaming "pass the goods through lukewarm
"soap and water, when the fast color is entirely fixed in the
"fibre or fabric."

[Printed, 4d. No Drawings.]

A.D. 1866, June 20.—No. 1657.

MÖLLER, JOHANNES.—"Improvements in obtaining and pre-
"paring coloring matter for printing, dyeing, and other
"purposes."

First, "the separating lime and other bases from madder
"root (or roots or plants of the same species or products from
"the same) by first boiling the root or material with water,
"afterwards mixing it with an acid, and subsequently wash-
"ing with water," as follows:—The materials coarsely ground
are boiled from one to two hours, if the water is hard adding
a small quantity of alkali, the matter collected on a filter is
washed with boiling water, pressed and mixed thoroughly
with from 40 to 65 per cent. of its own weight of strong acid,
preferring strong sulphuric acid of commerce. After the acid
has been in contact about an hour, pour on and stir in plenty
of cold water; the lime and other bases are dissolved, and
washed out by repeated washing with water until the matters
are free from the acid; or, the last traces of acid may be neu-
tralized with an alkali. If the material so prepared is to be
used for dyeing, it is mixed while wet with one or two per cent.
of an alkali, preferring carbonate or caustic potash, and when
dried, is ready for use. The liquid from the boiled roots is
treated with from 4 to 5 per cent. of acid as above, the colour-
ing matter called purpurine precipitates, and is separated and

washed in the cold. The filtered liquid is shaken strongly with petroleum by which the alizarine is dissolved, and this petroleum may be used to extract alizarine from madder root or material as follows:—

Second, “extracting alizarine from the roots or materials (treated as above described) by boiling them with petroleum, “naptha, (or other spirit or oil capable of dissolving alizarine)” as follows:—The materials are boiled with repeated portions of petroleum, on cooling the alizarine principally deposits; the solution may be used for treating fresh material or agitated with a solution of alkali, and the alkaline solution neutralized deposits the alizarine, which is collected on a filter and washed with cold water.

[Printed, 4d. No Drawings.]

A.D. 1866, June 23.—No. 1680.

LEE, ALFRED.—“Improvements in preparing wool or other animal fibrous substances, yarns, and woollen fabrics for dyeing.”

Subjecting “such substances to the action of steam in an enclosed vessel or chamber at a pressure of from one to six pounds on the square inch” by which the greasy, gummy, or other matters “are more freed therefrom than by the usual mode of boiling, and consequently,” better colours are produced “on animal fibres by the employment of the same kind and quality of the dye wares and also by the use of a less quantity than heretofore.” It has been found “that the most suitable vessel or chamber to be employed for the purpose is what is called ‘cottage steamers,’ used in print-works for steaming yarn and fabrics after having been printed, and which are well known by those conversant with the subject, but other forms or constructions of vessels may be employed.”

[Printed, 4d. No Drawings.]

A.D. 1866, June 26.—No. 1704.

RADISSON, ST. CYR.—(*Provisional protection only.*)—“Improvements in printing on woven fabrics.”

Mixing colouring matters such as are ordinarily employed for printing on fabrics with glycerine, either alone or mixed with a little albumin, printing with this mixture, and drying the

fabric. If a very low price be desired, "flour, dextrine, and
 " similar materials may be added to the glycerine with which
 " the coloring matters are compounded, and after printing
 " if the fabrics are steamed very solid colors are obtained."

"The process also allows of very beautiful prints being
 " obtained on silks and muslin fabrics, which will not bear
 " steaming and washing."

[Printed, 4d. No Drawings.]

A.D. 1866, July 19.—No. 1881.

TONGUE, WILLIAM.—"Improved methods and apparatus for
 " steeping, boiling, bleaching, and dyeing fibrous materials."

The first part of this invention relates to apparatus employed
 in boiling, steeping, bleaching, and otherwise treating fibrous
 materials, such as China grass, flax, hemp, and other similar
 fibres, where it is desirable to lay such materials in the solu-
 tions used "in a straight and unentangled state," and so to
 retain them, which is usually effected by laying the material
 in trays, and then placing such trays in a cistern containing
 the solution to be employed; and the first part of this inven-
 tion consists in arranging a table or platform within the
 cistern, which table or platform is capable of receiving a num-
 ber of trays, and can be raised or lowered without obstructing
 the free access to the cistern, so that the trays of the material
 can be lifted from a truck, or otherwise, and carried and
 placed in the cistern without the use of uprights, chains, or
 other impediments to the movements of the workpeople, such
 uprights or chains (as usually arranged in connection with
 trays alone) causing considerable delay in the operation, as
 well as wear and tear of the machinery employed. According
 to this invention the table or platform may be raised and
 lowered by various means, but the inventor prefers to actuate
 it by means of chains, or their equivalents, attached thereto,
 such chains passing over guide pulleys at the upper part of
 the cistern and down the outside thereof, and being coiled upon
 barrels to which motion may be given by suitable gearing.

Different modifications of this part of the invention are
 described, in one case a certain frame being placed in the
 cistern, capable of being raised and lowered by means of a
 beam and crank, and so giving an alternate up-and-down

motion to the platform and trays for the purpose of agitating the material in the solution.

The second part of the invention consists in a method of dyeing fibrous materials, such as silk, cotton, flax, China grass, and other vegetable fibres, after they have been brought into the form of a sliver, by causing rollers to draw such slivers to and fro in a dyeing trough or cistern, the latter being divided into compartments and furnished with oscillating guides, and the operation being repeated as often as necessary.

[Printed, 1s. 10d. Drawings.]

A.D. 1866, July 23.—No. 1912.

BOUSFIELD, GEORGE TOMLINSON.—(*A communication from Alcide Poirrier and Charles Chappat.*)—"Improvements in the manufacture of certain alkaloids derived from aniline and homologues, and in their transformation into coloring matters suitable for dyeing and printing."

First, the manufacture of the above alkaloids by "the reaction of hydrochlorate of aniline, or of the hydrobromate, or of the hydriodate, or of corresponding salts of its homologues, or of a mixture of these salts upon a methylic alcohol or other alcohol. The action is aided by heat and pressure."

Second, the manufacture of these alkaloids by "the reaction upon aniline or its homologues, or upon a mixture of aniline with one or more of its homologues of a methylic alcohol or other alcohol conjointly with the chlorides, or the bromides, or the iodides of ammonium, or of aluminium, or of calcium, or of magnesium, or of iron, or of zinc, or of other metal, the action being aided by heat and pressure."

Third, the manufacture of these alkaloids by "the reaction upon aniline or its homologues, or aniline mixed with one or more of its homologues, or of a methylic or other alcoholic nitrate or chloride," the action being aided by heat and pressure.

Fourth, the manufacture of other alkaloids by employing either of the three processes above "to cause to react on alcohol radical alkaloids derived from aniline (or from its homologue, or from a mixture of aniline with one or more of its homologues) the same alcohol or alcohols which served

“ to produce them, the alkaloid being substituted in the process for aniline itself.”

Fifth, the transformation “ of methylic or methyl ethylic or methyl amylic alkaloids, or the other alkaloids herein before set forth, into violet coloring matter suitable for dyeing and printing,” by heating them “ in a distilling apparatus at a temperature not exceeding 100° Centigrade,” together with “ the anhydrous bichloride of tin, or the biniodide of mercury, alone or mixed with a chlorate or the cyanide of iodine, or the bichloride of mercury, conjointly with a chlorate or the chloride of iodine, or the bromide of iodine, or bromine, or iodine; these two last conjointly with a chlorate, or an acid conjointly with a chlorate, either hydriodic, or hydrobromic acid, or sulphuric acid, or an iodate or a bromate, or iodic acid or bromic acid.” These are mixed together in different proportions, which are given. In some cases colour is formed when the materials are put together in the cold and allowed to remain for a few hours.

[Printed, &c. No Drawings.]

A.D. 1866, July 28.—No. 1956.

GRIESS, PETER, and CARO, HEINRICH.—“ Improvements in the preparation of bodies in which nitrogen is substituted for hydrogen.”

These improvements are separating the “ azo ” “ amido compounds ” from “ their solution in the solid and crystallized state by means of chromic acid or mixtures of chromic acid and hydrochloric acid, or the salts thereof.” A series of bodies in which nitrogen is substituted for hydrogen were described by one of the inventors, Peter Griess, as an example, “ take 2 parts of hydrochlorate of aniline, 8 parts of water, 4 parts of hydrochloric acid; through this mixture, which must not be allowed to rise in temperature higher than 70° F., a current of nitrous acid gas is passed as long as it continues to be absorbed, “ the process thus far being that already made known.” On adding now “ a cold saturated solution of two parts of bichromate of potash, previously mixed with one and a half parts of hydrochloric acid, sp. grv. 1.15,” “ immediate crystallization ensues.” “ The crystals are a compound of diobenzul with hydrochloric and chromic acid, and may be separated from the mother liquor

“ by filtering and pressing. On account of their explosive-
“ ness they must be carefully dried at a low temperature.”
Instead of operating with currents of nitrous acid gas, solu-
tions of nitrites, as nitrite of sodium or calcium, may be em-
ployed by slowly adding them to the mixture until nitrous acid
is perceived by its smell. “ To obtain the compounds of nitro-
“ genized bodies with chromic acid only” the amido com-
pounds are wholly or partially dissolved in sulphuric or nitric
acid, treated with nitrous acid, and a cold solution of bichro-
mate of potash. “ Similar chromates of azo compounds are
“ produced” in like manner by acting on “ toluidine,
“ naphthaline, rosaniline, amido-benzoil acid, benzdine, &c.”
These compounds “ are highly explosive, and may be applied
as fulminating substances, while their products of decompo-
“ sition have been found useful as coloring matters and dye
“ stuffs.”

[Printed, 4d. No Drawings.]

A.D. 1866, August 11.—No. 2063.

COLLINS, JAMES, and CAMPBELL, ANDREW DWIGHT.—(*A communication from Jabez Elverson.*)—(*Provisional protection only.*)—“ Improvements in stamps for producing impressions,
“ which are also applicable to cylinder printing.”

“ Casting or constructing the letters or designs to be im-
“ pressed of india-rubber, and mounting such designs or
“ letters in a solid block of metal attached to a handle, or in a
“ roller. To obtain the design in india-rubber any ordinary
“ type or design may be arranged or ‘set up’ in the form
“ required, and held in a frame, after which a mould of
“ fusible metal or plaster of Paris is taken therefrom, and a
“ solution of india-rubber is poured into such mould, which,
“ when dry, may be stripped from the mould, and a casting
“ of india-rubber of the design will be the result, and which,
“ when properly mounted and the surface of the letter inked
“ by means of a roller or pad, will be found to yield clear and
“ well defined impressions when stamped on paper or woven
“ fabrics.” If necessary “ the face of the india-rubber casting
“ may be polished or smoothed by being placed in contact with
“ a disc revolving in water, but if the casting be well per-
“ formed this will not be required.” These impressions are
designed for printing upon “ paper, wood, fabrics, or other

“ materials, and may be used either as a hand stamp or with mechanism in the form of cylinders, as in printing calicoes.”

[Printed, 4d. No Drawings.]

A.D. 1866, August 14.—No. 2083.

WANKLYN, JAMES ALFRED, and PARAF, ALFRED.—(*Provisional protection only*).—“ Improvements in the production of green coloring matters for dyeing and printing textile fabrics and yarns.”

“ It is already known that a small quantity of valuable green dyes is produced in the manufacture of the substitution violets, of which Hofmann’s violets and Wanklyn’s violets are the best known example;” but the object of the present invention is to convert “ the whole or almost the whole of the violet into green dyes.” This is effected as follows:—Heating under pressure to about 230° Fahr. for about three hours “ about equal weights of rosaniline, of alcohol or wood spirit, or other suitable solvent, and of iodide of ethyl or the iodine compound got from glycerine, known as iodide of isopropyl, or of other compound used to effect replacement of hydrogen.” “ The product is then shaken up with about four times its weight of an aqueous solution of carbonate of soda containing about one per cent. of carbonate of soda.” A solution of the green dye is obtained and a solid mass of violet dye, which is converted into an almost colourless base by boiling for some time with potash or soda ley “ (the salts of which are violet dyes).” This solid product, after the treatment with alkalies, is dried, ground and mixed with an equal weight of alcohol and iodide of ethyl: it is then heated as before, under pressure with iodide and treated as before; the resulting base is again heated under pressure as before with more iodide; “ this time very much green dye is produced.” “ In this series of operations there is obtained a large quantity of solution of green dye in carbonate of soda. This solution may be used at once for dyeing and printing, or may be farther purified.”

[Printed, 4d. No Drawings.]

A.D. 1866, August 17.—No. 2114.

HUGHES, EDWARD THOMAS.—(*A communication from Charles Large.*)—(*Provisional protection only.*)—"The application of "chlorine for the condensation of nitrous gas, and" "the "apparatus connected therewith."

The nitrous gas "arises from the manufacture of rusty "mordants or any other products;" this invention consists in the oxidation of such gas by chlorine in contact with water by attaching to "the first of a series of about twenty jars arranged "similar to the bottles of Woolfe's apparatus, one or "more vessels for the production of chlorine, according to the "extent of the manufacture. Thus, when 3,000 killos. of "copperas is acted on by 4 to 500 killos. of nitric acid two "apparati for evolving chlorine will be sufficient," each containing "50 killos. of bi-oxide of manganese, on which is "poured 150 killos. of hydrochloric acid, and then both are "heated to about 100° Centigrade in a water bath or by "means of steam. The nitric acid is added by degrees to "the copperas, about 50 killos., at intervals of a quarter of "an hour, and the operation occupies about two days." "About 50 per cent. of the nitric acid employed is regenerated," and "can be mixed with the ordinary nitric acid for a fresh "operation for producing rusty mordant or other purposes."

[Printed, 4d. No Drawings.]

A.D. 1866, August 17.—No. 2115.

PARAF, ALFRED.—"Improvements in the use and application "of an inorganic glyceric ether."

"Glycerine heated with arsenious acid dissolves its own "weight" of arsenious acid, forming "a neutral arsenite, "being of great value as a dunging salt in madder dyeing," and it is applied to this purpose. "Furthermore, owing to "its properties of suffering decomposition in contact with "water, and steaming into insoluble arsenious acid and "glycerine," it is found "to be a valuable fixing agent for "soluble colors, especially coal tar colors, upon textile fabrics "or yarns," operating upon them as follows:—"I dissolve "one part of arsenious in one part of glycerine by heating "both together; then I take one pound of this so-formed "arsenious glyceric ether with two ounces of any crystallized

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" aniline color dissolved in two pounds water and thickened with starch. After printing I steam for from one-half to three-quarters of an hour, when by the decomposition of this arsenious ether the arsenious acid is made insoluble in the cloth and fixes the coloring matters."

[Printed, 4d. No Drawings.]

A.D. 1866, August 22.—No. 2153.

CARO, HEINRICH.—(*Provisional protection only.*)—" Improve-
ments in the preparation of colouring matters."

Obtaining "purple and blue colouring matters from ros-
aniline, aniline reds and violets, by first treating cold and
acid solutions thereof with nitrous acid, and afterwards
submitting the azo-compounds thus obtained to the action
of stannous chloride or other suitable reducing agents.
The red solution thus obtained is neutralized with an alkali
or alkaline salt, and the resulting precipitate, when treated
with acetic or other acids, yields purple and blue colouring
matters soluble in alcohol, and possessing tinctorial prop-
erties similar to the ordinary aniline purples and blues."

[Printed, 4d. No Drawings.]

A.D. 1866, August 22.—No. 2156.

HASELTINE, GEORGE.—(*A communication from Henry Jones
Duncan Farquharson and Isaac Cowles Colton.*)—" An improved
process for bleaching with the aid of hydrostatic and pneu-
matic pressure, conjointly or separately, wood, straw, and
other fibrous material for the manufacture of paper pulp,
and for bleaching flax, hemp, thread, yarns, felt, cloths,
and other fibrous and textile materials."

"For bleaching yarns, felts, cloths, and textile fabrics"
the ordinary bleaching chemicals or fluids are to be used
in a closed tub, vat, or cylinder, either rotary or stationary,
by hydrostatic pressure, the extent of which "will vary
according to the nature and kind of material to be operated
upon." "No particular kind of machinery for this purpose
is necessary, except that the vessel, tub, or cylinder should
be hermetically or very tightly closed. The material to
be bleached should, during the process, be agitated so as
fully to receive the bleaching liquid in all its parts. The

“ time required will necessarily vary according to the nature of the material to be bleached.”

[Printed, 4d. No Drawings.]

A.D. 1866, August 28.—No. 2220.

CLARK, WILLIAM.—(*A communication from Auguste Pascal and Félix Varenne.*)—(*Provisional protection not allowed.*)—“ Improvements in perfecting or ornamenting lace and other like fabrics, and also in imitations of the same.”

“ The application of lithographic or other printing for producing designs on lace, net, and imitations thereof.”
 “ The lithographic process is applied in the following manner:—The stone having received the desired composition and design, the object to be printed is fixed on paper in the proper position, afterwards operating in the ordinary way of producing lithographic or other impressions. Further, all kinds of metallic colors may be used according to the designs or ornaments to be obtained, which colors may be fixed by steam or otherwise according as lace, net, or imitations are to be acted on. It will be readily understood that the impression may be made either on one or both sides of the article.”

[Printed, 4d. No Drawings.]

A.D. 1866, August 30.—No. 2236.

MELLOR, JAMES MONTAGUE.—“ Softening, disintegrating, and bleaching vegetable fibres.”

“ A solution of carbonate of soda, or sal-soda, or other alkali, at from one to ten degrees Baumé, and about an equal quantity of lime water, mixed together,” is used. A current of electricity is in some cases made to pass through the solution while such material is immersed therein, such electricity also itself acting upon the material as a softening or disintegrating agent. Or in place of electricity, ozone may be used, such ozone being forced through both solution and material. The solution is to be used either with or without electricity or ozone, as the “ nature of the fibre indicates.”

For bleaching vegetable fibres the inventor employs “ a combination of about equal quantities of solution of chloride of lime, at from one to five degrees Baumé, and solution of carbonate of soda, or sal-soda, or other alkali at about the

" same strength," electricity or ozone being also used in the process or otherwise, " according to the nature of the fibre to be acted upon."

" Electricity and ozone may also be employed, separately or in combination with any suitable substance other than the solutions herein-before described for softening, disintegrating, and bleaching vegetable fibres."

By means of the first part of the invention wood, straw, flax, bamboo, and other vegetable matters are deprived of a large portion of the gum, silex, and colouring matter contained in them, such materials being then washed, and the remaining gum, silex, and colouring matter being then (by preference) extracted therefrom by passing the materials between heavy iron rollers.

[Printed, 4d. No Drawings.]

A.D. 1866, September 1.—No. 2249.

GREENWOOD, JOHN OATES.—(*Provisional protection only*).—" An improvement in certain textile fabrics."

This invention " relates to certain textile fabrics known as ' melange fabrics,' or fabrics in the manufacture of which a particular kind of mixture weft is used, called ' melange yarn,' " and the " improvement consists in printing such fabrics in various ornamental designs and colours after the manner of calico printing," by which are obtained " novel and beautiful effects on this class of fabrics not heretofore produced."

[Printed, 4d. No Drawings.]

A.D. 1866, September 3.—No. 2266.

BROOMAN, CLINTON EDGUMBE. — (*A communication from Cyprien Marie Tessié du Motay and Charles Raphael Marechal*). — A " method of bleaching fibres and fabrics of vegetable origin."

The fibres or fabrics are covered with a layer or coating of peroxide of manganese by immersing them in a solution of a salt of manganese, and then in a solution of an alkaline peroxide or of an alkali and a hypochlorite or of any body capable of furnishing oxygen; " the same end may be attained " by the immersion of the vegetable fibres in baths of soluble " manganates or permanganates." The sesqui-oxide of man-

ganese is likewise transformed into peroxide by chlorine, hypochlorous, and hypochloric acid, and by boiling in contact with oxygen or air in a lye of caustic soda or potash, the fibres coated with peroxide of manganese by any of these methods "are placed in a damp state upon the ground in bleaching "houses or places, or upon hurdles or frames, until the "reduction of the peroxide of manganese is principally or "completely effected." When "this reduction is judged "sufficient the fibres or fabrics are dipped in water containing "in solution either sulphurous acid, or hydrofluoric acid, or "sulpho-azotic acid, or any other acid capable of dissolving "the oxides of manganese, or in liquors containing in solution alkalies or alkaline lyes, which dissolve the oxides of "manganese." The fibres and fabrics thus cleansed are submitted to the action of alkaline lyes, and lastly, are washed and "covered again with a layer of peroxide of manganese, "then submitted to the operations before described until "the decoloration is complete."

[Printed, 4d. No Drawings.]

A.D. 1866, September 25.—No. 2463.

BARKER, JAMES.—"Improvements in apparatus employed "in printing and folding paper hangings and woven fabrics."

These improvements are, in cylinder printing machines with several colours, "a conical indentation is formed in the "spindle, and the pinching screw is formed with a conical point to enter the indentation. For finding the correct position for the indentation a pinching screw is used with a "conical point on its outer end also. A thread or cord is "held tight so as to coincide with the register points of the pattern at opposite ends of the roller (care being taken to "form these register points on the pattern surface of the roller accurately in line). The bush is then turned round "until the pinching screw is accurately under the thread, "and the pinching screw is screwed in to mark on the spindle "the point for the indentation. In making the adjustment just described the position of the bush lengthways on the "spindle is accurately adjusted by a gauge or measure, so "that the lateral guard lines of the several impressions may "all coincide. A mark is put on the toothed wheel, by "preference in the line of the pinching screw and register

“ points, and when the printing rollers are being entered into the machine a mark is put on the large ‘pitch’ wheel gearing with the roller wheels opposite the mark of the wheel of the roller first entered. The large ‘pitch’ wheel is then turned to bring its mark opposite the positions of the other rollers, and these are entered in succession each with its mark coinciding with that on the large wheel at the time of entering. These arrangements allow of the rollers being at once placed in their proper positions, any slight inaccuracy still remaining being quite within the control of the tangent screws without it being even necessary to draw the rollers out of gear.” “The paper or fabric as printed passes in some cases from the printing machine into and along a drying stove and returns towards the machine again, near which a pair of suitably driven rollers draw it into a swinging case, by which it is laid in folds on a carriage or platform below.”

[Printed, 10d. Drawing.]

A.D. 1866, October 9.—No. 2615.

PEYTON, EDWARD.—“Improvements in the manufacture of printing rollers or cylinders.”

These improvements are “in the production of a cylinder or roller for printing calico and for other like purposes,” uniting a thin copper shell or outer cylinder with an iron or strong metal tube in the following manner:—Take the copper shell of any suitable thickness and coat the inside with tin, or solder, or other metal having a like affinity for the copper; place “centrally within this shell the inner tube of iron, coated or tinned also if necessary, and pour in between the two, molten spelter, or other metal or alloy of metal capable of combining with without destroying the tin or solder coating, which will when cool form a solid mass with the iron and the copper shell.” If an iron lining tube be not requisite, this invention consists in employing in its place “a mandril or core which can be removed as soon as the spelter has cooled, and thus leaving an aperture for the spindle.”

[Printed, 4d. No Drawings.]

A.D. 1866, October 13.—No. 2656.

DALE, JOHN, and DALE, JOHN GALLEMORE.—“Improvements
“ in sulphuring yarns and fabrics.”

First, in place of hanging the goods in a room with sulphurous acid produced by burning sulphur or passing them through such a room by means of rollers, “placing the goods
“ in air-tight vessels capable of sustaining some pressure, and
“ provided with arrangements for the introduction of steam,
“ and into such vessels a quantity of sulphurous acids, either
“ alone or mixed with steam, and produced by the decomposition of sulphuric acid by charcoal, or the combustion of
“ sulphur in contact with air, in which latter case a force
“ pump is used, whereby the sulphurous acid is forced into
“ the vessel. When piece goods are required to be treated
“ with sulphurous acid they may be wound on a perforated
“ pipe and the sulphurous acid forced through them, either
“ alone or mixed with steam, or water may be super-saturated with sulphurous acid and used in closed vessels in
“ the manner described instead of using sulphurous acid vapour.”

Second, “washing the wool or fabric in the same vessels in
“ which the ‘sulphuring’ has been effected, and this is done
“ by forcing either steam or water through them.”

[Printed, 4d. No Drawings.]

A.D. 1866, October 16.—No. 2669.

BOUSFIELD, GEORGE TOMLINSON.—(*A communication from Alcide Poirrier and Charles Chappat fils.*)—(*Provisional protection only.*)—“Improvements in the manufacture of green and
“ blue coloring matters.”

“On the violet, and by preference on the violet blue matters
“ obtained by the processes” described in No. 1912, A.D. 1866, “there are caused to react the iodides, bromides, or
“ other salts of an alcoholic base in the proportion of 1 to 3
“ equivalents. The iodide of methyl or the iodide of ethyl,
“ or a mixture of the two, with or without the addition of an
“ alcohol is employed,” The process may be conducted as follows:—“There is put into a vessel of enamelled iron 1 part
“ by weight of violet matter, 2 parts by weight of iodide of
“ methyl, 2 parts by weight of methylene, and $\frac{1}{4}$ th part by

" weight of sulphuric acid, the whole is heated for 24 hours to a temperature of 100° Centigrade (in a close vessel); then from 10 to 15 parts of boiling water are added and allowed to stand for some time, and the liquid is saturated with weak soda, the green coloring matter is in solution, and in this state is suitable for dyeing." The blue remaining in the viscous mass with some untransformed violet is separated by exhausting it with boiling water mixed with a small quantity of acid or alcohol, and the solution obtained is suitable for dyeing. " By acting in the same way on aniline and roseaniline violets the same results are obtained." The operation of heating is continued " during 18 to 24 hours, according as it is wished to develop more or less of green coloring matters or of blue coloring matters."

[Printed, 4d. No Drawings.]

A.D. 1866, October 17.—No. 2686.

GIRARD, CHARLES ADAM.—(*Partly a communication from George de Laire.*)—"Improvements in the manufacture of blue coloring matter."

First, treating diphenylamine and other similar substances afterwards mentioned with sesqui-chloride of carbon, so as to obtain blue colouring matter.

Second, treating the same with oxalic acid, so as to obtain blue colouring matter.

Besides diphenylamine, it is said "that pure ditolylamine yields under the same conditions a brown coloring matter; pure diphenylamine yields a blackish-violet blue; and phenyltolylamine a bluish violet or violet blue; but a mixture of diphenylamine and ditolylamine and of diphenylamine and phenyltolylamine in any proportions yields a blue." To obtain the blue dye, "introduce into a distilling apparatus (the retort and receiver may be of enamelled cast iron) 2 parts of commercial diphenylamine and 3 parts of sesqui-chloride of carbon," and "heat the mixture, taking care to maintain the temperature between 170° and 190° Centigrade. The blue color is rapidly developed, and in 5 or 6 hours the mass assumes a bronzed aspect, and becomes brittle on cooling. The retort is furnished with an agitator. The melt with the bronzed aspect is powdered and treated until complete exhaustion in a dis-

“ placement apparatus with benzole or ether at a gentle heat.
“ The warm solvent filters through the powdered melt, and
“ is afterwards distilled, the vapour is condensed and returned
“ on to the melt. A small quantity of bluish violet and
“ untransformed sesqui-chloride of carbon and diphenylamine
“ are dissolved, and the blue remaining is dissolved in alcohol
“ or methylated spirit, and used for dyeing or printing, or it
“ may be purified by throwing it down from its alcoholic
“ solution by hydrochloric acid.”

In the Provisional Specification the heat employed in the making is from 146° to 180° C. In the Provisional Specification it is also stated that arsenic acid and perchloride of naphthaline will produce as above a blue colour, but nothing is said of these substances in the Final Specification. When oxalic acid is used the temperature is from 110° to 120° C.

[Printed, 4d. No Drawings.]

A.D. 1866, October 22.—No. 2719.

PETITDIDIER, FRANÇOIS.—A “method of printing or applying designs in relief and brilliancy to all kinds of fabrics.”

This method consists in dissolving all kinds of resinous materials, as “resin, asphalte, benzene, yellow ambre, succin, colophony, copal, damarcu resin, dragons’ blood, elemi, caoutchouc, gutta percha, gum, aloes, gum-lac, mastich, sandarac, olibanum, incense, turpentine, copaiba, liquid amber, China varnish, tar,” and other such substances, “in their solvents, alcohol, or spirits of wine, ether, naphtha, acetum, chloroform, linseed oil, pink oil, or oil of walnut, essence of turpentine, penic, essence of lavender, oil of aspic, essence of rosemary, camphor, American essence (essence d’Amerique), coal benzole, benzine petroleum, or other liquids.” The solution is filtered by means of “a sieve made of cloth and brass,” and this solution may be coloured by mixing it “with soot, lamp black, ivory black, virgin black, black called German black, and the like, arnotto, sorrel, curcuma, saffron, fuchsine, violet, aniline blue, and the like,” “until there are no granular parts whatever, then it is filtered through a sieve of cloth and brass, and it is ready for use.” If it be required to give some relief to the impression, a large quantity of the material is used, if otherwise, and brilliancy is required without relief,

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a small quantity is used. It is applied "to all fabrics by the printing processes already in use." Also employing "gelatinous gums or glues." The impressions are sometimes sprinkled "with a metallic dust in order to give the appearance of gold, silver, steel, or other appearances considered desirable."

[Printed, 4d. No Drawings.]

A.D. 1866, November 6.—No. 2872.

GROTE, AUGUSTUS.—(*Provisional protection only.*)—"Improvements in printing textile fabrics or yarns."

It is stated that "hitherto it has been found impossible to fix the aniline green by printing, on account of its being destroyed during the steaming process," but that if the green be "mixed with a certain amount of sulphurous acid," a compound is formed "which resists the destructive action of the steam." It is of importance to get a concentrated solution of the green. A most concentrated solution of the green is got by mixing "16 ounces green, by weight, in paste, and 10 ounces alcohol by weight," and "completely saturating this mixture with sulphurous acid gas." "The following proportions give a good shade, using albumen as the fixing agent:—One part of the above solution thickened with three parts of albumen water (or more according to the shade required), half a part of bisulphite of soda; this mixture is then printed in the ordinary way. If after steaming the color does not appear green, the cloth must be passed in most diluted acetic acid (say one part of acid to 200 parts of water), and then dried or steamed for a few minutes."

[Printed, 4d. No Drawings.]

A.D. 1866, November 10.—No. 2937.

JOSSE, GUSTAVE.—(*Provisional protection only.*)—"Improvements in ornamenting and producing certain figured and embossed surfaces for various useful purposes."

"Producing various surface ornamentations" upon a number of things, among which are "textile and other fabrics." The invention consists "in employing for the above purposes metallic and other preparations, such as bronze, gold or

“ silver powders, flock, paint, enamel or distemper colors, by applying the same to the various surfaces ” “ through the medium of block printing, lithography, embossing, or photography, whereby a greater brilliancy of effect is obtained than by the ordinary process of register or color printing as at present.” The said device is first printed in adhesive size or other similar matter, so that the powdered substances aforesaid applied thereto are caused to adhere and produce the pattern desired, the “ sheets are then calendised as may be found requisite, paint being also employed for forming the device, letters, or figures when required in lieu of the powdered substances.”

[Printed, 4d. No Drawings.]

A.D. 1866, November 10.—No. 2945.

SWINNOCK, WILLIAM GEORGE EDWARD.—(*A communication from Auguste Pascal and Félix Varenne.*)—(*Complete Specification, but no Letters Patent.*)—“ Improvements in lace fabrics.”

“ Printing designs or patterns on lace or net fabrics, or imitations of the same in one or more colors, which may be varied according to the nature of the subject to be represented, viz., flowers, fruit, foliage, arabesque designs, or other ornamental fancy subjects,” as follows:—“ The stone having received the desired composition and design, the object to be printed is fixed on paper in the proper position, afterwards operating in the ordinary way of producing lithographic or other impressions. All kinds of colors, including those obtained from metals, may be used according to the designs or ornaments to be obtained, which colors may be fixed by steam or otherwise accordingly as lace, net, or imitations are to be printed. It will be readily understood that the impression may be made either on one or both sides of the articles.”

[Printed, 4d. No Drawings.]

A.D. 1866, November 12.—No. 2955.

FREEMAN, GEORGE FREDRICK.—(*Provisional protection only.*)—“ A new composition applicable to rollers for calico printing and to other purposes.”

This composition “ consists of a mixture of copper, tin, lead, and antimony.” “ Take a brass or white metal roller,

"made in the ordinary manner," and on it "cast a covering of this composition, consisting of about 65 parts of tin, 8 of copper, 10 of lead, and 17 of antimony," or "the entire roller may be cast of the improved composition. A great saving in the cost of calico printers' rollers is effected by the use of the above composition."

[Printed, 4d. No Drawings.]

A.D. 1866, November 13.—No. 2967.

MACDONALD, WILLIAM STEVENSON.—"Improvements in the method and means of cleansing textile and other fabrics and materials, also in the method and means of cleansing and preparing textile and other fabrics and materials to be dyed or printed and dyed."

In scouring and cleansing textile materials and fabrics they are first subjected to a scouring process in a mixture of blood and water, or blood and water combined with arsenious acid. The arsenious acid should be dissolved in the blood and water at a temperature of from 110° to 120° Faht., until the gum or greasy matters contained in the material or fabric are removed, and, when the scouring is completed, the material or fabric is cleansed by washing in clean water. The arsenious acid "should be added to the blood while it is being stirred warm from the animal, and the stirring should be continued until the blood is cold, to keep it in a liquid state." The proportions in which the ingredients are mixed may be varied according to circumstances."

In preparing materials or fabrics for dyeing or printing they are first immersed in a mixture of blood and water, or blood combined with arsenious acid and water, at the same temperature as before, the material or fabric being saturated with the mixture by the employment of a gigger or padding trough, and then wrung or passed between squeezing rollers, or placed in a hydro-extractor, in order to remove the superfluous moisture, the "animal matter" being then fixed in the material or fabric by passing it through a steam chest, or blowing or forcing steam through it, or passing it through hot or boiling water. "For light shades of color it may be necessary to submit the fabric to a bleaching process before it is dyed or printed, but for dense dark colors the dye astringents or mordants may be employed alternately with the animal matter two or more times."

In fixing colours on fabrics which have been already dyed or printed, they are treated according to either of the modes already set forth, the invention being particularly applicable “in fixing spirit and steam colors and colors dyed with wood extracts, and colors derived from aniline.”

In fixing and cleansing the mordants on fabrics which are to be dyed and printed they are treated with a solution of blood, or blood mixed with arsenious acid at any temperature between 100° and 150° Faht., “according to the nature of the color under operation.” This treatment is mentioned as being particularly beneficial in the case of colours “which require to be dyed after the mordants are padded or printed and dried in the fabric, and sufficiently cooled and aged (or kept in a wet state).”

[Printed, 4d. No Drawings.]

A.D. 1866, November 24.—No. 3091.

SEITZ, CARL DIETRICH JULIUS.—(*Provisional protection only.*)

—“An improvement connected with the bleaching of fibrous substances and with the manufacture of bleaching powder, bleach liquor, or sulphuric acid.”

“Combining the bleaching process or processes with that either of the manufacture of bleaching powder or bleach liquor, or sulphuric acid, and thus making use of the same gas twice.” “While the chlorine gas which is to be employed in the manufacture of bleaching powder or of bleach liquor as usual, is on its way from the vessels in which it has been generated to the chambers or boxes in which the bleaching powder is to be made, or to the vessels wherein bleach liquor is to be made,” it is brought “in contact in any convenient vessel with the substances to be bleached, these substances being dry, damp, or suspended in water or other suitable liquid, the substances are thereby bleached; after this the chlorine gas, both absorbed and not absorbed, is conducted to the bleaching powder chambers or boxes, or to the bleach liquor vessels, in the usual way, and the gas absorbed by the liquid and the bleached substance is extracted by applying some exhausting apparatus.” Or instead of using chlorine gas, employing “sulphurous gas in the same way for the same purpose, the gas not absorbed being conducted into chambers for the manufacture of sulphuric acid.”

[Printed, 4d. No Drawings.]

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A.D. 1866, November 24.—No. 3093.

MITCHELL, JAMES, and LAIRD, WILLIAM CUMMING.—“A new or improved detergent material applicable to the cleansing of wool and other fibrous substances, and to all purposes where coarse soap is used.”

This detergent is applicable not only to the cleansing of wool “in the fleece and in the yarn,” but also to the cleansing of cotton, hemp, jute, and other fibrous substances. In preparing this detergent, the inventors “make use of the residual material known as the ley, which is composed of silicious, oily, and resinous matters combined with soda, and which is obtained after boiling rags, esparto grass, straw, or other materials used in the manufacture of paper with a solution of a soda. The proportions of soda with these ingredients will of course vary according to the nature of the ley employed. This coloured liquid is to be evaporated to the consistency of a thick paste, which becomes semi-solid on cooling,” to which the inventors add “various preparations of carbonate of soda, soda ash, or caustic soda or sulphide of sodium, potashes, or carbonate of potash, or caustic potash, or urine, either separately or mixed together, as occasion may require. The above described chemicals are to be added in different proportions, to suit the peculiar nature or properties of the articles or substances to be cleansed or operated upon.”

In some cases “the evaporated ley alone is sufficient to cleanse the materials to be operated upon,” the “essential components” of this novel detergent being “caustic soda silica, and organic mucilage.”

The inventors have found a mixture composed in the proportions of one ton of concentrated ley to two tons of water, and 5 cwt. of soda ash, to “give the best results,” but they do not confine themselves to any particular proportions of the ingredients.

[Printed, 4s. No Drawings.]

A.D. 1866, November 30.—No. 3152.

CLARK, WILLIAM. —(*A communication from Jules Albert Schklumberger.*)—“Improvements in the manufacture of green coloring matter.”

These are as follows:—Aniline green has been obtained by treating rosaniline (or its salts dissolved in a mineral

acid) "by an hydrate of an acetic nature, such as aldehyde;" the "blue formed by the above reaction is treated by an alkaline hyposulphite, and it is by introducing the sulphur element into this blue that the green coloring matter is obtained;" but by this process "rose toluidine, or salts of the same," are dissolved in one and a half parts of sulphuric acid, and to this solution about four parts of aldehyde are added; "it should be understood that if a base of rose toluidine be employed, twenty-five per cent. less is required than when one of its salts is used. After a certain period of contact the matters become changed to a blue," when a heated solution at about 170° Faht. is poured in "of two parts of hyposulphite of soda to one hundred parts of water. Any other matter capable of adding the sulphur constituent to the rose toluidine blue, may also serve in the manufacture of the improved toluidine green."

[Printed, 4d. No Drawings.]

A.D. 1866, December 5.—No. 3195.

BROOMAN, CLINTON EDGUMBE.—(*A communication from Charles Lauth.*)—"Improvements in the manufacture of "colouring matters."

The manufacture of violet colouring matters from methyl-aniline, or from dimethylaniline, or from a mixture of these two bases as follows:—One part of either of those bases or a mixture of the same is mixed with a half part of hydrochloric acid of commerce, and about ten times its weight of sand; this mixture is heated in an open vessel to a temperature of about 245° or 250° Faht., and the temperature is kept up until the mass becomes hard and of a dusky bronzed appearance, which takes place in about from 5 to 8 hours. "The whole is "withdrawn and the color dissolved out with boiling water "and sea salt throws it down from this solution" "in the "state of a brilliant greenish mass." These bases or their mixture are also transformed into violet by mixing them with a half part of a salt of copper (nitrate or chloride) and operating in the same manner as before, "only it is not necessary "to heat to a temperature beyond 212° F." Mercurial acetate may be employed in the same manner as the salt of copper. "Aqua regia employed in the proportion of 50 per cent. of "the alkaloid transforms it into violet at a temperature of

" 245° or 250°; ferric sulphate employed under the same conditions gives the same results. The quantities described, the temperature, and the length of the operation may be more or less varied."

[Printed, 4d. No Drawings.]

A.D. 1866, December 7.—No. 3227.

LOWE, JESSE, and LOWE, PETER.—(*Provisional protection only.*) — "Improvements in machinery or apparatus to be employed in printing paper, calico, or other surfaces."

These improvements are "an arrangement of mechanism to be applied to the cylinder over which the fabric passes and to the printing roller, and so to regulate and adjust their relative speeds thereby as to effect the proper 'registration' and coincidence of the pattern and color." "The apparatus consists of a pair of cone drums, each having a worm on their shafts gearing into a worm wheel, one being employed to drive the cylinder carrying the fabric and the other to drive the printing cylinder, so that they may be actuated independently of each other. A handle lever and guide fork is so connected with the strap on the cone pulleys that the movement thereof will increase or diminish the speed of either cylinder or roller at will." "The printing roller is also provided with a handle and spring by which it may be moved laterally." "To regulate the tension of the fabric the roll is mounted in bearings, and as the piece unrolls it passes over a guide roller under a roller mounted in the ends of two levers, over another guide roller and on to the cylinder; at the opposite ends of each of these levers is a sliding weight, and the fulcrum thereof is secured to the framing, so that the rising or falling of the lever roller (which depends on the looseness or tightness of the fabric) causes a break attached to the levers to be applied to or removed from the shaft carrying the roller of fabric, whereby its rotation and the tension of the piece is regulated and adjusted, the whole being so arranged that it may be turned out of the way to allow of a new roll being substituted for the one removed after printing."

[Printed, 4d. No Drawings.]

A.D. 1866, December 7.—No. 3232.

GRAY, THOMAS. — “Improvements in the preparation of
“bleaching materials or compounds.”

Chloride of lime is usually employed for bleaching, and unless the process is conducted carefully “there is a risk of
“injuring or weakening the fabric or fibres submitted to the
“action of the chlorine;” “it is believed that this arises
“from the presence of free acid in the bleaching compounds,”
which also retards the operation of bleaching. The object of this invention is “to eliminate this acid from the bleaching
“compound, or at any rate to neutralize it, so that even if
“the acid be present it will be inert,” as follows,—“neutralizing the free acid contained in bleaching compounds
“or chlorine gas by passing the gas through an alkaline
“solution previous to bringing it into contact with the
“lime with which it is to be combined.” It will be sometimes found more convenient to mix “soda ash, caustic soda,
“or other alkali in a solid but pulverized state, with the
“ground lime, so that when the chlorine gas is brought into
“contact with the lime the free acid may be caused to combine” with them. Mixing about 2 ozs. of soda ash to one pound of lime.

“As a modification of this latter process the soda ash
“or other caustic alkali may be ultimately mixed in a
“pulverized state in the proportions already stated, with
“bleaching powder or chloride of lime made in the ordinary
“manner.”

[Printed, 4d. No Drawings.]

A.D. 1866, December 15.—No. 3303.

SWAN, JOSEPH WILSON.—“Improvements in the treatment of
“gelatinous tissues, of gelatine and gum, and of compounds
“containing such substances.”

These improvements are, “the use of salts of the sesquioxide
“chromium, as, for example, sulphate of the sesquioxide of
“chromium, or the substance known in commerce as chrome
“alum, as a means of rendering gelatine or gum (senegal or
“arabic), or compounds containing those substances, insoluble
“in water.” This invention is applicable to various purposes
named, among which is calico printing, and the process is

carried out as follows, either by adding "a solution of chrome alum or other suitable salt of the sesquioxide of chromium to the thickened color or dye" or applying "a solution of the above-mentioned salt or other analogous salt to the textile fabric either before or after printing, or where the addition of a chromate or bichromate would not be injurious to or incompatible with the mixture of colour or dye, instead of the said salt of chromium," adding "to the color or dye chromate or bichromate of potash or other suitable chromate or bichromate." "When the fixing solution is applied to the fabric before or after printing it may consist of five parts by weight of chrome alum and one hundred parts of water, and when the fixing solution is added to the thickened color or dye one part of the fixing solution composed as above mentioned may be added to every ten parts of the thickened color or dye."

[Printed, 4d. No Drawings.]

A.D. 1866, December 18.—No. 3326.

SCHAD, LUDWIG.—"Improvements in treating aniline colors for dyeing and printing."

Obtaining these colours in the finest state of division, in order to prepare them for dissolving more readily in alcohol, acid, &c. This is effected by dissolving them in fused chloride of aniline and throwing this mixture "quickly in well agitated water," which dissolves the chloride of aniline and leaves the colour in an extraordinary state of fineness. As an example—as soon as the required shades of blue or violet are obtained by heating one part rosaniline with three parts of aniline—the pan is cooled and the aniline neutralized "with hydrochloric acid of 30° Twaddle. The addition of the hydrochloric acid throws the bulk of the blue out of solution which generally goes together in one large mass. The pan is then heated again until all the water is evaporated, and all the color is gone in solution. As soon as complete solution is effected," it is thrown as above into "well agitated water." When the mixture has been well washed and filtered, "the color has become a stiff paste." To use the paste for dyeing, it is brushed "with much water through the cloth," and the liquor so obtained is used "like an alcoholic solution." "To convert powder of aniline, blue,

"violet, or Hoffmann's or other violets into paste," the colour is dissolved in three times its weight of aniline neutralized with hydrochloric acid and proceeded with as above. "In making violet paste a considerable quantity of color goes frequently in solution; this is prevented by the addition of common salt to the water."

[Printed, 4d. No Drawings.]

A.D. 1866, December 24.—No. 3386.

DUFRENÉ HECTOR AUGUSTE.—(*A communication from Jules Pernod.*)—"Improvements in the manufacture of the extract of madder."

"The employment for the manufacture of the extract of madder of the property possessed by boiling acidulated water, of dissolving the coloring principle in madder, and of the slight solubility of such coloring principle in cold acidulated water, thereby permitting of the separation of such principle and utilizing the acidulated water," as follows:—Powdered madder or garancine, or any product of madder, is boiled for about a quarter of an hour in "water acidulated with sulphuric or other low priced acid or with an acid salt," and the liquid filtered on cooling deposits the colour, which being washed "can be used in the paste condition or after being dried." The extract is obtained in a purer state "by dissolving it in alcohol, adding water and distilling. The purified extract then deposits and only filtering is required, and to leave the deposited matter to drip in the filter."

[Printed, 4d. No Drawings.]

SUPPLEMENT.

A.D. 1695, December 14.—No. 346.

MATTHEWS, THOMAS, and FERRERS, THOMAS.—"Damasking, striking, and fixing of colours into leather and all sorts of stuffs, cloths, and velvets and haire on both sides, and also the makeing of tapestry with grogram yarne by diverse wayes and meanes never before vsed in this kingdom."

[No Specification enrolled. Letters Patent printed, 4d.]

A.D. 1785, September 21.—No. 1496.*

BANCROFT, EDWARD.—“The use and application of certain “vegetables for dying, staining, printing, and painting “certain valuable colours.”

The first vegetable material used for the above purposes is the inner bark of the black oak, or *quercus nigra*, of the United States. The bark is separated from the tree in spring, its outside part cut off, and the inner part, thoroughly dried and coarsely ground, is packed in casks and shipped; the spaces between the casks are filled with pieces of the same bark, shaved, but not ground. This dye is called quercitron bark and it resembles, in its properties and method of working for dyeing purposes, the dye of the weld or would plant; it is, however, more powerful in colouring principle. No alkaline salt should be employed with quercitron bark when either a yellow or green colour is wanted from it; nor, with silk or wool, should cream of tartar be used with the alum, for the same colours.

The second vegetable material is the North American hickory or walnut tree. The whole of this bark may be powdered, pressed into casks, and thus imported. The dye is similar to that of the quercitron bark, but less powerful.

The third vegetable material is the red mangrove or *rhizophora* mangle. The whole bark is dried, packed and imported as above. The colour is best extracted by boiling the bark in potash water. A reddish brick colour is the result. The colour is improved by the use of the mordants employed in dyeing with weld or quercitron bark.

[Printed, 6s. No Drawings.]

A.D. 1800, December 17.—No. 2459.

DUXBURY, JAMES.—A “machine or instrument to print “distant sprigs or spots on calico, cotton stuffs, linen, silk, “satin, cloth, woollen, baize, or leather in a more compleat “and expeditious manner than has been hitherto used, “denominated a double copper cylinder and copper plate.”

[No Specification enrolled.]

A.D. 1803, December 31.—No. 2746.

CROSS, ROBERT, and SOUTHWORTH, THOMAS.—“ A mode
“ of heating such pans, vats, cisterns, and other vessels as
“ are required to be heated by fire and used for working
“ steam engines, and in the business of a calico printer, dyer,
“ brewer, paper maker, bleacher, salt maker, tanner, and
“ other such like trades, by which invention much expence
“ will be saved not only in the fuel to be used in the heating
“ such vessels, but also in the constructing the vessels them-
“ selves.”

This invention consists as follows: instead of applying the fire to these boilers, &c., as heretofore in general use under the boiler, the flues being on the outside, the fire is to be put into the furnace in the inside of the boiler surrounded with water, and the flues also, which flues, may be carried once, twice, thrice, or more times inside of the boiler surrounded with water. “ The boilers may be made of wood, stone, brick, cast or wrought iron, or any other material waterproof.” Soot and light ashes accumulating within the furnace and flues are cleared away by water from a boiler above; the water must be admitted into the chimney and flues by a valve or inlet fixed in the cistern.

[Printed, 8d. Drawings.]

A.D. 1809, May 15.—No. 3236.

JOHNSON, WILLIAM.—A “ process for heating fluids for the
“ purposes of art and manufactures.”

This process is adapted, among other purposes, for dyeing, and it consists in conveying steam under pressure from a boiler into a close receptacle or chamber; under another boiler or vessel in this chamber is a tap for drawing off any condensed water. “ Where one steam boiler is designed to
“ provide steam” for a number of vessels, it is necessary to have a number of small pipes communicating with the close vessels attached to the main pipe, with taps to each pipe. In the apparatus experimented with, there is a division in the boiler, so as to form “ two boilers in one vessel, one above
“ the other, with distinct quantities and surfaces of water,” both having safety valves and discharge taps. “ When pre-
“ ferred by the employer” a double vessel is placed on the

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fire of equal breadth with its surface ; in the lower vessel in contact with the fire, it is proposed "to employ linseed or " other oil (which requires a temperature of about 600 degrees " before they evaporate)."

[Printed, 6d. Drawing.]

A.D. 1811, December 9.—No. 3511.

HUDSON, JOHN.—" A composition for printing or painting " on paper, linen, stuccoed walls, and boarding, for the purpose of ornamenting the walls and ceilings of rooms."

The Specification of this invention describes the manufacture of paper hangings and mural decorations, &c. Although the word "linen" is mentioned in the title, nothing in the description of the invention demands notice as specially connected with the printing of fabrics treated of in the present work.

[Printed, 4d. No Drawings.]

A.D. 1816, May 14.—No. 4029.

WILSON, DANIEL.—" Apparatus's to be employed in the distillation of animal, vegetable, and mineral substances, and " in various other processes."

The apparatus for " dyeing, bleaching, and calico printing," has " two metallic vessels one inside of the other with a small " space between each." The liquid " is put into the interior " vessel, and the space between the inner and outer vessels " is half filled with an oil, tallow, resinous, or fatty matter. " The fire being applied to the vessel in the usual manner it " is transmitted through the oil, tallow, resinous or fatty " matter to the liquid in the interior vessel, which is thereby " heated."

[Printed, 8d. Drawing.]

A.D. 1817, May 17.—No. 4123.

COOK, BENJAMIN.—" An improved method of making and " constructing rollers or cylinders, both solid and hollow."

This invention relates to cylinders for calico printing.

The inventor states:—" I make my rollers or cylinders " either hollow or solid, of cast iron, or wrought or hammered " iron, of such sizes I find convenient, which cast iron or " wrought or hammered iron rollers or cylinders I place

“ within cylinders of copper, brass, or a mixture of copper, brass, or other metals, which outside cylinders of copper, brass, or mixture of copper, brass, or other metals, I compress upon the inside cylinder of cast iron, or wrought or hammered iron, by passing them through holes in a draw plate, or other ways.”

These rollers admit of the engraving being obliterated and renewed twice or thrice, and when the outside cylinder of copper is worn out, the inside cylinder of iron may always be covered again at a very small expense.”

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 32 (*second series*), p. 198; and Rolls Chapel Reports, 8th Report, p. 121.]

A.D. 1834, August 23.—No. 6669.

SLATER, JAMES. — “Improvements in addition to certain improved machinery for bleaching linen and cotton goods.”

The addition to the said machinery is for the purpose of laying the goods which are in process of bleaching into the steeping or boiling cisterns, these improvements being applicable when the distinct pieces of cloth are stitched together so as to form continuous bands of very great length.

Stitching the pieces together does not form the subject of this invention, as it has already been secured in No. 5620, A.D. 1828. The present invention consists in the above-mentioned addition which lays the goods; also in additional improvements “for separating the compound continuous bands of cloth into the single bands whereof the same is composed.”

1st. The apparatus which lays the goods. The cloth comes away from the squeezing rollers in two compound bands which are side by side like one. This one compound band ascends to the ceiling, and (by means of bearing rollers and leading troughs) is conveyed into the boiling house; the band then passes under a guide roller, over a stretching roller, and down again beneath another guide roller. A long loop of the cloth is made by moving the stretching roller vertically. Delivering rollers deliver the band into the cistern, being mounted on a movable carriage for that purpose; the band is let down through a trunk, the pendulous motion of which lays the cloth in zig-zag folds which are side by side, owing to the motion of the carriage along its railway. When a com-

plete layer is formed, the carriage begins to return along its railway to form a new layer.

2nd. Separating the bands. A mangle motion rack vibrates a pendulous frame, so that the cloth is deposited in zig-zag folds into several baskets, each basket receiving a distinct band.

[Printed, 4s. 2d. Drawings. See London Journal (*Newton's*), vol. 11 (*conjoined series*), p. 221: also Rolls Chapel Reports, 7th Report, p. 154.]

A.D. 1835, November 5.—No. 6922.

WHITEHEAD, JOHN. — “Improvements in scouring and “cleansing.”

This invention relates to a cleansing composition that contains cocoa-nut oil, fine sand, and spirit of hartshorn. Modifications of this cleansing mixture are set forth.

The article is scrubbed on both sides, drawn through pure cocoa-nut oil, wiped, and subjected to the pressure of an hydraulic press. If the whole of the unctuous mixture has not been expressed, the article is rinsed in spirits of turpentine; it is then suspended “in an air-tight box or “chamber having a still head communicating with a worm “surrounded with cold water in a worm tub,” and a pipe inserted near the bottom thereof for the introduction of steam or hot air. The steam or hot air thus passed through the chamber carries off with it the spirits of turpentine, which becomes condensed in the worm and again fit for use. The final portion of the smell caused by the spirits of turpentine is driven off by exposure of the article to a temperature of 140° Faht.

A Disclaimer and Memorandum of Alterations was enrolled by the above-mentioned John Whitehead on November 20th, 1838, in which the evaporation and condensing box are disclaimed. Sundry alterations in accordance with this disclaimer and to more clearly explain the methods of scouring and cleansing are also set forth.

[Printed, 4d. No Drawings. See London Journal (*Newton's*), vol. 21 (*conjoined series*), p. 477 for disclaimer.]

A.D. 1835, December 10.—No. 6952.

SIMPSON, LIGHTLY.—“An improvement in the preparation “of certain colours to be used for printing cottons and other “fabrics.”

The novel point of this invention is the use of a mucilage obtained from "Carragheen moss" ("choudrus crispus") "in the mixing of certain colours applied in the printing of calicoes, muslins, or other cotton or linen fabrics by machines" or by block printing. Such mucilage is substituted for, or is mixed with foreign and British gums, farina, starch, and other substances hitherto employed in the production of mucilage. The moss is well washed in cold water, boiling water is then poured on to it in the proportion of about 1 gallon to from 5 to 8 ounces of moss; the whole is well stirred for about half an hour, and is then allowed to cool; when cool it is poured through a sieve or strained through a cloth, and the mucilage is then ready for use; or a thinner mucilage may be similarly made. Water at a temperature of 120° Faht. will answer the purpose of boiling water, but it will be necessary "that the mixture should be kept to that temperature for about 12 hours."

In printing by blocks "it is desirable and almost necessary" to add to the mucilage "a portion (as the case may require) of British gum, flour, farina, or starch thickening prepared in the common way."

In printing by machine the patentee invariably mixes with the mucilage one of the before-named substances "in the proportions varying from $\frac{1}{8}$ to $\frac{1}{4}$ of the mucilage" according to the nature of the colour, the style of the printing, and the quality of the gum, &c.

[Printed, 4d. No Drawings. See London Journal (*Newton's*), vol. 10 (*continued series*), p. 71.]

A.D. 1836, April 7.—No. 7056.

BRIDSON, THOMAS RIDGEWAY. — An "improvement or improvements to facilitate and expedite the bleaching of linen and other vegetable fibres."

This invention consists in "the improvement or improvements effected by performing every chemical operation" herein-after mentioned "between the first and last wheeling of the cloth in one and the same vessel or kier," by means of an arrangement of apparatus which is described below. Also of the use and application of the ingredients of the description and in the states set forth, "whereby the necessity of a removal of the goods from the kier between any of those

"operations is superseded." These improvements "effect a great saving of labour, steam, or other power, and time incident to the ordinary mode of bleaching, and dispense with the lime stew or boil now generally used."

The drawings show a kier constructed of stone, provided with a false bottom. Two pipes are fixed beneath the false bottom, one for the conveyance into it of steam, the other a draw-off pipe. Above the kier are taps connected with the reservoirs of solution. The liquids are caused to drain through the cloth for the required time by means of a pump in the centre of the vessel, which pumps up the liquid as quickly as it drains through the cloth.

The solutions used are alkaline ley, hot water, cold water, chloride of lime, and dilute sulphuric acid.

[Printed, 10d. Drawing. See Repertory of Arts, vol. 7 (*new series*), p. 16; also London Journal (*Newton's*), vol. 9 (*conjoined series*), p. 100.]

A.D. 1836, December 9.—No. 7251.

WRIGHT, LEMUEL WELLMAN.—"Improvements in machinery or apparatus for bleaching or cleansing linens, cottons, or other fabrics, goods, or other fibrous substances."

[No Specification enrolled.]

A.D. 1837, April 20.—No. 7348.

WRIGHT, LEMUEL WELLMAN.—"Improvements in machinery or apparatus for bleaching or cleansing linens, cottons, or other fabrics, goods, or other fibrous substances."

This invention consists in improvements upon the invention set forth in No. 5154, A.D. 1825.

The present improvements are:—1st. The construction of a steam tight vessel, in which the goods are placed in close contact. 2nd. The manner of passing the alkaline solutions through the compact mass by means of high pressure steam. 3rd. The mode of washing out the alkali, &c., used by means of high pressure steam. 4th. The manner of forcing the solution of chloride of lime and sulphuric acid through the goods by hydraulic and pneumatic pressure. 5th. The mode of cleansing the chemical matters from the goods after the bleaching operation has been completed.

The vessel is of cast-iron, rectangular, but tapering towards the bottom; this vessel is lined with slate, and has a slate

cover, it also has a perforated false bottom. Alkaline ley is first admitted to the compacted goods from an upper cistern. Steam at a high pressure being admitted, soon causes the ley to boil and thus forces the liquor through the goods; the liquor is finally discharged by the pressure of the steam. The vessel is then filled with clean water which is first heated and then driven out by the steam. By cold water and hydraulic or air pressure, the temperature of the goods is reduced so that the subsequent process of chloride bleaching and scouring may be similarly performed, or the two latter processes may be performed in another vessel.

[Printed, 1s. 4d. Drawings. See London Journal (*Newton's*), vol. 15 (*conjoined series*), p. 265; and Rolls Chapel Reports, 7th Report, p. 186.]

A.D. 1837, April 22.—No. 7349.

GRATRIX, WILLIAM.—“Improvements in the process of bleaching or cleansing linens, cotton, and other fibrous substances; and also improvements in the process of discharging colours from the same, either in the raw material or manufactured state.”

[No Specification enrolled.]

A.D. 1839, April 9.—No. 8028.

WRIGHT, LEMUEL WELLMAN.—“Improvements on machinery or apparatus for washing, cleansing, or bleaching of linens, cottons, and other fabrics, goods, or fibrous substances.”

This patent is an extension for the term of seven years of No. 5154, A.D. 1825.

[No Specification enrolled.]

A.D. 1839, May 25.—No. 8079.

DE HERRYPON, MARTIAL AUGUSTIN JOSEPH.—(*A communication*).—An “apparatus for washing and bleaching wool, cotton, linen, silk, and other fibrous materials, either in a manufactured or unmanufactured state.”

This machine consists of a skeleton drum mounted on an axle and divided into compartments by radial arms; each compartment contains flexible chambers in which the goods are placed. The chambers expand as they ascend, on one side of the wheel, and collapse as they descend on the other, during the revolution of the apparatus. The drum, thus fitted, is

enclosed in a steam-tight casing which is divided into two portions, an upper part, and a lower part. The upper part has a movable cover and contains steam or air; the lower part acts as a bath that contains the liquids used. As they revolve, the goods are alternately expanded in the liquids and compressed out of the liquids.

"This apparatus is constructed in such manner that when the operations of washing, bleaching, or rinsing are completed, the liquids used for this purpose can be readily let off from the bath without opening the case, and the several flaps or folding parts capable of being held or secured in such positions that the several flexible chambers or compartments shall be stretched out or extended in order that the goods or materials may be subjected to the action of steam or hot or cold air, as desired, for the purpose of drying the same or further carrying on the process of bleaching or cleansing."

[Printed, 1s. 2d. Drawings. See *Inventors' Advocate*, vol. 1, p. 276.]

A.D. 1840, August 27.—No. 8612.

UNSWORTH, HUGH.—"Improvements in machinery or apparatus for maugling, drying, damping, and finishing woven goods or fabrics."

The principal features of this invention are:—

1st. A combination of mechanism whereby all the above-named processes, "employed in bleaching goods or other operations, may be performed in one machine instead of being separately effected by distinct machines or processes, as hitherto done."

2nd. "Passing the cloth after it has been once dried, again partially through the mangling or calendering portion of the apparatus, and in contact with the wet cloth, in order that the dry cloth may thus be damped."

3rd. "The application of a drying cylinder to the ordinary mangling or calendering apparatus;" this application refers to those instances in which the above-mentioned combination is employed in mangling only.

Ordinary mangling or calendering rollers are supported by the main framing of the machine, as well as a large steam-heated drying cylinder; other auxiliary drying cylinders are

also provided. Leverage may be used to increase the pressure of the mangling cylinders.

The wet cloth from the squeezers, after bleaching, is placed upon a table and first guided over and under stretching rails, between the lower mangling rollers, round the large drying cylinder to the calendering rollers and over the auxiliary drying cylinders. The dried cloth is again passed into the machine at the back, so as to be damped by contact only, instead of being separately damped by another machine.

[Printed, 1s. Drawings. See Repertory of Arts, vol. 18 (*new series*), p. 78; London Journal (*Newton's*), vol. 19 (*conjoined series*), p. 252; Mechanics' Magazine, vol. 34, p. 204; and Inventors' Advocate, vol. 4, p. 149.]

A.D. 1840, December 16.—No. 8740.

GRAHAM, HUGH.—“A new mode of preparing designs and
“dyeing the materials to be used in the weaving and manu-
“facture of Kidderminster carpets, and for producing patterns
“thereon in a manner not before used or applied in the process
“of weaving and manufacturing such carpets.”

[No Specification enrolled.]

A.D. 1840, December 30.—No. 8758.

KEMPTON, WILLIAM HENRY.—“Improvements in cylinders
“to be used for printing calicoes and other fabrics.”

[No Specification enrolled.]

A.D. 1841, May 6.—No. 8950.

GRAHAM, HUGH.—A method of dyeing the weft for Kidderminster carpeting, so as to produce “more than one colour,
“either on the figure or the ground across the entire width of
“the said carpeting, from the same thread of weft.”

After having been scoured and dried, the yarn is reeled all of a length on an ordinary traversing reel; “the circumference of this reel should be rather more than twice the width
“of the carpet intended to be wove, to allow for the turns.” The skeins are then placed upon dyeing poles, each skein being tied under the pole to prevent its shifting; the lower end is then dyed to any length or gauge required. This being done, the skein is placed between two pieces of wood fastened firmly together with clamps, the poles are withdrawn, and the other ends are suspended in like manner upon another vessel

to be dyed another colour. This process may be repeated as often as required for dyeing with other colours.

[Printed, 6d. Drawings.]

A.D. 1843, May 2.—No. 9718.

HESFORD, JAMES.—“Improvements in the manufacture of certain bowls or rolls.”

The invention relates to “the manufacture of bowls or rolls, such as are commonly used by bleachers, calenderers, and others, for mangling, callendering, and squeezing cloth and other fabrics and substances.”

Instead of making bowls of the trunks of trees, the timber is cut into thin sections or layers transversely to the grain or fibre. The layers are arranged either in entire rings or in segments around the shaft; they are then subjected to pressure, as in making paper or cotton bowls, always taking care that the grain or fibre of the several layers shall run parallel to the shaft round or upon which they are pressed.” “Each of the section or layers should be planed or otherwise made smooth and true on both faces.”

[Printed, 6d. Drawing.]

A.D. 1845, January 11.—No. 10,466.

KEASLEY, THOMAS.—“Improvements in the manufacture of leather, part or parts of which improvements are also applicable to other useful purposes.”

The inventor describes five methods of removing hides and skins from the tan liquor during the process of tanning, exposing them for a short time to the action of the atmosphere and then immersing them again. The apparatus is also applicable for raising other materials requiring similar treatment, as in dyeing various fabrics.

1. Two sets of hides, &c. are fastened to two frames which are suspended from the opposite ends of a vibrating lever, the bearing of which is on a framing placed between two tan pits. The two ends of the lever project over these tan pits. From the ends of the lever a rope passes under a barrel or windlass, so that by turning the windlass one end of the lever is depressed, and the other is raised, in such a way as to immerse one set of hides, and to lift the other from the pit. By

reversing the action of the windlass the positions of the two ends of the lever and of the two sets of hides are reversed.

2. Instead of a vibrating lever, two fixed standards are used projecting over two tan pits. At the extremities of these standards pulleys are placed. A rope passes round a barrel or windlass placed between the two pits, and over the pulleys. The frames holding the hides are attached to the two ends of this rope. By means of the windlass, the hides are alternately raised and immersed. If necessary the standards may be dispensed with and the pulleys fixed to a ceiling.

3. By using one pulley over a tan pit, instead of two pulleys over two tan pits, one set of hides can be worked instead of two.

4. A strong beam is placed over a series of tan pits, and a series of pulleys is fastened to this beam in such manner that the pulleys are over the spaces between the pits. A rope passes through these pulleys, and the frames with the hides are hooked to those parts of the rope which are over the pits. One end of the rope is attached to the beam, and the opposite end to a windlass or barrel. By means of this windlass, the hides can be lowered and raised. If necessary the frames with the hides can be made to counterbalance one another by using two ropes instead of one, or by using a rope passing from the end of the beam through pulleys, round the windlass, and then back again through pulleys to the end of the beam.

5. A railway is placed over the pits. Along this railway a travelling windlass runs, by which the frame with the hides can be hoisted up from any pit. The frame after being hoisted up is suspended from a hook placed over the pit.

[Printed, 1s. Drawings. See London Journal (*Newton's*), vol. 27 (*continued series*), p. 156.]

A.D. 1845, October 31.—No. 10,904.

HARDCASTLE, JAMES.—“Improvements in the methods of
“scouring, bleaching, preparing, dyeing, and finishing piece
“goods or woven fabrics.”

[No Specification enrolled.]

A.D. 1847, July 31.—No. 11,827.

SANDEMAN, HECTOR.—“Improvements in the materials
“and processes employed in dressing, clearing, scouring, and

“bleaching certain textile fabrics, and the materials of which such fabrics are composed.”

1st. The cold process.—Employing the ordinary solutions of the alkalies or alkaline earths, that are used for the above operations, in a cold state. The goods have a preparatory steeping in warm water, they are then immersed for twelve hours, by preference, in a solution of milk of lime, more lime being used than can be dissolved by the quantity of water employed. The process may be used “by itself, or combined wholly or partially with any of the ordinary or other processes of bleaching.”

2nd. The thermal process.—Employing the same solutions as in the first improvement, preferably the milk of lime, at temperatures lower than boiling point, varying from the mean temperature of the atmosphere to 170° Faht. If alkaline solutions other than the milk of lime be used, the maximum temperature is 150° Faht.

3rd. The employment of a “binary compound” in the above-mentioned processes. The binary compound is prepared by adding to milk of lime a clear solution of chloride of lime and stirring the mixture, the quantity of lime and the strength of the chloride solution being the same as that now used by bleachers.

4th. Employing chloride of sodium in the above operations.—The goods are steeped for an hour or two in a solution of this salt, and, when drained, are immersed in dilute sulphuric acid for a similar time. The goods are then washed, and steeped in milk of lime or in the binary compound.

In a Disclaimer enrolled on the 31st January 1848, the patentee disclaims the word “dressing” in the above title.

[Printed, 6d. No Drawings. See *Mechanics' Magazine*, vol. 48 (*continued series*), p. 162; and *Patent Journal*, vol. 4, p. 296.]

A.D. 1847, September 9.—No. 11,868.

MORGAN, DAVID, and JENKINS, JOHN BORLASE.—“Improvements in the manufacture of copper and other metal cylinders or rollers for the printing of silks and other fabrics and for other similar purposes, and in casting copper and other metal cylinders, tubes, or rollers hollow and free from air bubbles.”

[No Specification enrolled.]

A.D. 1849, February 8.—No. 12,461.

BARNES, JOSEPH.—“An improved apparatus for bleaching, dyeing, clearing, and steaming animal or vegetable fibrous substances, either in a raw or manufactured state.”

[No Specification enrolled.]

A.D. 1851, March 31.—No. 13,580.

RICHARDSON, JOSEPH.—“Improvements in dyeing and cleansing piece goods.”

1st. Apparatus for immersing woollen and worsted goods in the dye liquor. A dye vat, supported on a framing, is furnished with guide rollers in series. A metal frame is bolted to one end of the vat and forms a bearing for one end of the axles of the supply or draw-off rollers. By means of bevil pinions, the motion of the prime mover is communicated to the supply and draw-off rollers alternately, so that the supply rollers may in their turn become draw-off rollers and *vice versa*. A steam pipe, pierced with fine holes, admits steam to the dye liquor.

The goods are sewn together to form one continuous length and wound on the supply roller. The other extremity of the connected pieces is passed over a fixed bar, over and under the guide rollers until it emerges from the vat and passes over a second bar to the draw-off roller. The motion of the rollers is reversed, so as to draw the fabric from the full roller again into the dye liquor, and this operation is repeated as often as may be required.

2nd. An arrangement of apparatus for washing piece goods after they have been submitted to the dye bath. A vat is divided into compartments and is furnished with octagonal rollers in two series, one outside the framing, the other near the bottom of the vat. The overflow of the first compartment fill the second, and so on to the last compartment, where it is discharged by a cock.

The cloth as it comes from the washing machine is folded by a folding apparatus.

[Printed, 10d. Drawing. See London Journal (*Newton's*), vol. 40 (*continued series*), p. 13; *Mechanics Magazine*, vol. 55, p. 299; and *Patent Journal*, vol. 12, p. 2.]

A.D. 1851, September 25.—No. 13,755.

WATT, CHARLES.—“Improvements in the decomposition of saline and other substances, and in separating their com-

“ ponent parts, or some of them, from each other ; also in the
 “ forming of certain compounds or combinations of substances;
 “ and also in the separation of metals from each other, and in
 “ freeing them from impurities.”

First, decomposing, by the agency of electricity, saline or other substances in solution, placed in a vessel, divided into two or more parts or compartments by a partition or partitions composed of porous materials. The apparatus is heated by a steam jacket or otherwise. The electricity is “ supplied by six
 “ cells of Daniell’s constant battery,” when acting upon chloride of potassium or sodium alone, but when “ it is wished
 “ only to prepare chlorine gas, I operate upon hydrochloric
 “ acid, or upon a mixture of chloride of potassium and diluted
 “ sulphuric acid (containing not less than one tenth of real
 “ acid), and it will be found that electricity of so high a degree of intensity will not be required,” as “ when both the
 “ constituents of a saline substance are to be eliminated in a
 “ separate state. The chlorine thus obtained may be conveyed
 “ away and collected for use.”

Second, converting chlorides of the alkalies or alkaline earths into hypochlorites by “ merely keeping the vessel
 “ warm,” say from 100° to 120° Fahr., continuing the electrical application “ until as much of the saline matter has been converted into a hypochlorite as may be required to the purpose
 “ to which the solution is to be applied.” This mode may be used for preparing a bath for the purpose of bleaching various kinds of goods, “ and the bath may be strengthened from time
 “ to time by the action of the electric current or currents.”

[Printed, 8d. Drawing. See Repertory of Arts, vol. 19 (*enlarged series*), p. 301; and Mechanics’ Magazine, vol. 56, p. 277.]

A.D. 1852, April 28.—No. 14,093.

RICHARDSON, THOMAS.—“ Improvements in treating matters
 “ containing lead, tin, antimony, zinc, or silver, and in obtaining such metals or products thereof.”

The “ alloys of copper and tin, which are sometimes sold as
 “ waste products ” are exposed in a “ reverberatory furnace to
 “ a current of hot air ” until converted into oxides of these metals, these oxides are then treated with “ acetic or sulphuric
 “ acid for the manufacture of acetate or sulphate of copper,”
 and the oxide of tin which is left may be reduced by any

method, or, after washing with water to free it from adhering salts, it may be employed "in the place of the metal or ore for the production of muriate of tin or stannate of soda by any of the methods now in use for the manufacture of these salts."

[Printed, 10d. Drawing. See Repertory of Arts, vol. 20 (*enlarged series*), p. 357, and Mechanics' Magazine, vol. 57, p. 393.]

A.D. 1852, August 12.—No. 14,260.

LAMING, RICHARD.—"Improvements in the manufacture and the burning of gas, in the treatment of residual products of such manufacture, and of the distillation of coal or similar substances, and of the coking of coal."

One part of this invention refers to,—firstly, "the extraction of the alumina from the coke or the ash of boghead or similar coals by hot sulphuric acid;" the solution may be concentrated by evaporation, or "may be made into alum in the usual way;" secondly, treating the coke of boghead or similar coals as follows:—The coke is to be burnt in the open air, care being taken "that the ignited coke never lies in heaps of more than a few inches thick, and that its temperature never rises from any cause high enough to fuse together the alumina and the silica with which this kind of coke abounds; by these means the coke is reduced to a white ash. Sometimes, instead of first reducing the coke to a white ash," the coke itself may be lixiviated.

[Printed, 4d. No Drawings. See London Journal (*Newton's*) vol. 42 (*conjoined series*), p. 238; Mechanics' Magazine, vol. 53, p. 175; and Journal of Gas Lighting, vol. 3, p. 59.]

A.D. 1852, October 4.—No. 206.

MOSELEY, JOHN.—"Improvements in machinery for cleansing linen and other fibrous materials."

This invention may "be used by the manufacturer for the purpose of cleansing newly-made linen, long cloths, calicoes, and such like fabrics."

Along the entire inside length and breadth of the washing trough or receiver, a piece of strong canvas is stretched; the canvas passes over a small roller at each end of the trough, and unites again underneath, like a roll towel. Motion is imparted to the canvas by machinery connected to the rollers.

The canvas sinks in the middle, so as to receive the articles to be cleansed. The cleansing apparatus consists of two or more rows of stampers, which are fixed across the trough; the stampers are raised by projections from the main spindle of the machine, and, when released, strong springs bring them down in rapid succession upon the linen as it gradually passes under them, the ends of the stampers being immersed in soap and water. Then the articles pass between several equidistant and parallel rollers that revolve rapidly round a common centre and above the canvas, "which, with its contents, is constantly kept pressed up against these revolving rollers by another similar roller underneath, which is acted upon by a strong spring. The articles now pass up the opposite shelving end of the receiver, and at this end the roller mentioned before, over which the canvas travels, has another roller placed immediately above, and kept down upon it by its connection with a strong spring from the side of the receiver. The travelling of the canvas brings the articles between these two rollers, by which the water is squeezed out, when the operation is complete."

[Printed, 1s. 1d. Drawings.]

A.D. 1852, October 7.—No. 289.

TATHAM, JOHN, and CHEETHAM, DAVID.—"Improvements in rollers or bosses used for drawing or conveying textile materials and fabrics."

The first part of this invention "may be applied to rollers used for calendering, to those employed in printing machines, or to others where elasticity is required;" it consists in the adaptation of cork to these rollers. In this case the inventors "prefer applying the cork in discs provided with central orifices, which being strung side by side upon a spindle are compressed together, and secured by nuts or other means."

[Printed, 4d. No Drawings.]

A.D. 1853, March 26.—No. 732.

WORRALL, JAMES, junior.—"Improvements in the method of preparing, treating, and finishing cut, piled, or raised fustians and other similar goods or fabrics, and in the machinery or apparatus connected therewith."

1st. Processes by which the pieces may be dyed up or
 “ printed previously to cutting or raising the pile, thus dispensing with the process of flour and lime stiffening, and
 “ also that of scouring and cleansing the cloth in order to
 “ remove the same.”

2nd. A steaming cylinder and its apparatus.

The processes employed are :—1st. The cloth as taken from the loom is animalised by impregnating it with fatty matter and then dried. 2nd. The face of the cloth is hardened and singed. 3rd. The pieces are folded and arranged inside a steaming cylinder which is first filled with high pressure steam and then with an alkaline ley. The cloth is then washed and dried. 4th. Chloride of lime is padded on to the surface of the cloth, and the cloth is passed through a very weak solution of the same ; the bleaching is then finished. 5th. The dried piece is passed through a mordant of gelatine with a mineral solution, and dyed or printed. 6th. The cloth is stretched upon a stretching machine ; the pile may then be cut or the napped surface raised, the back of the cloth having been previously perched. 7th. An extra “ feel ” may be imparted to the cloth by stiffening it. 8th. The pile or nap upon the face and back of the cloth is now dressed or raised, and the face shorn off.

The steaming cylinder is mounted on brickwork so that it may contain a hollow cylindrical frame upon which the fabric to be operated upon is rolled.

[Printed, &c. Drawing.]

A.D. 1853, May 19.—No. 1244.

FULTON, WILLIAM.—“ Improvements in the treatment and
 “ scouring or cleansing of textile fabrics.”

This invention relates generally to an addition to and modification of the preparing mangles employed in the preparation and cleansing of woven goods. The goods are passed beneath guide rollers at the bottom of the scouring box, thence up, behind the squeezing rollers to an overhead guide roller ; from this roller the fabric descends parallel to its ascending course. One or more revolving, scraping, or agitating rollers or brushes are placed between the ascending and descending fabric. These rollers are fitted with longitudinal blades or

scrapers and they are driven at a high rate; they work upon one side of the piece. Subsequently a pair of breadthening rollers act upon both sides of the cloth, and the piece passes through the mangle in the usual way. The goods may then be passed between adjusted frictional plates.

This process "materially hastens the preparation of the " goods for being printed upon."

Instead of the rotary dasher scrapers which are shown in the drawings, rotary, stationary, or traversing brushes may be used for giving the required frictional effect. Screw breadtheners may be employed instead of rotary breadtheners. By a suitable disposition of guide rollers and frictional details, both sides of the piece may be worked simultaneously. The ascending and descending surfaces of the fabric may be pressed against each other, thus making the fabric its own scourer.

[Printed, 8d. Drawing.]

A.D. 1853, July 8.—No. 1632.

POOLE, MOSES.—(*A communication.*)—"Improvements in the " manufacture of printing rollers."

It appears that this invention relates to calico printing rollers, and it consists in manufacturing them of "an alloy " of which zinc is the basis, to be substituted for copper " in the manufacture of such rollers, whereby a very " large saving in cost of material and in labour is effected, " and in casting such alloys in metallic moulds under " pressure."

The alloy contains a large proportion of zinc, it also contains, copper, antimony, lead and tin. The melting takes place in two separate crucibles; in one, an ingot containing copper, antimony, lead, and zinc is formed, in the other a mixture of zinc and tin. These being melted and combined, are stirred together and form the required alloy.

The alloy is cast into proper rollers for printing in an apparatus called the "compressing shell apparatus;" this consists of two longitudinal semi-circular semi-cylinders so made as to form, when the edges are joined together, as near as may be, a circular hollow centre, with machinery to compress gradually the above-mentioned alloy when in a compressible state, and

within such semi-cylinders, by as near as may be an equal pressure along the entire length of the cylinders.

[Printed, 8d. Drawing.]

A.D. 1854, February 14.—No. 357.

IRVING, THOMAS.—“Improvements in obtaining a metallic and lustrous appearance to fabrics and yarns.”

“This invention consists of subjecting fabrics and yarns to solutions of salts of tin, zinc, and silver, and to cyanogen and steam.

“For this purpose, supposing tin to be used, I prefer to pad or saturate the fabric or yarn with a solution of stannate of potash or soda, then to a solution of cyanide of tin, and then to steam, or I use a solution of glauber salts and cyanide of tin, and steam. If zinc is to be used, I prefer a solution of the ammonia sulphate of zinc, then to dry the cloth or yarn, and then to pass it into or subject it to a solution of cyanide of tin or of silver, and then to steam and cyanogen. If silver be used, I prefer to employ a solution of cyanide of silver, and then to subject the cloth or yarn to steam, with or without cyanogen.”

[Printed, 4d. No Drawings.]

A.D. 1854, December 8.—No. 2580.

JOLLY, FREDERIC.—“Improvements in machinery or apparatus for mangling, stiffening, filling, and finishing cotton and other piece goods.”

These improvements “consist in the application to mangles, such as those used by bleachers, of an additional trough or troughs containing starch or any other suitable substance or composition with which it is desired to fill or finish the surface of the cloth operated on, and in combination with such additional trough or troughs of suitable apparatus and bowls, by means whereof the cloth is conducted into and through the substance or composition, or between the bowls by which the substance or composition is pressed into or on the cloth under operation.”

If so desired “the cloth, after passing through an ordinary wet or finishing mangle, may be conducted between two bowls, whereof the lower one works in a trough containing starch or other suitable substance or material.”

The drawings show this invention applied to a wet mangle, also to a finishing mangle.

[Printed, 10d. Drawing.]

A.D. 1854, December 18.—No. 2668.

JOHNSON, JOHN HENRY.—(*A communication from Obadiah Rich.*)—"Improvements in extracting tannic acid from leather, and in preparing the leather in the manufacture of glue."

These improvements are, in reference to this subject, as follows:—"The leather having been first chopped in small pieces is thoroughly washed to remove the dirt and a part of the coloring matters," and is digested in a solution of ammonia, potash, or soda, the latter preferred on account of cheapness (its sp. gr. about 1.025), for about "six to twelve hours or until the whole of the tannin has been extracted." The leather is then pressed to expel the liquor, or it may be submitted to a centrifugal machine. "This liquor is now acidulated with sulphuric, muriatic, or acetic acid," so as to set free the tannin, which, among other purposes, may be used in dyeing. The leather may be steeped a second time in the alkaline solution to remove any traces of tannin, and this solution is employed on fresh portions of leather. This process, it is stated, besides "being applicable for the extraction of tannin or tannic acid from scraps or shavings of leather and old boots and shoes," it is proposed "to apply the same principle" for "extracting it from the tannate of soda, the tannate of potash or other tannates, and combining it with such substance as will render it suitable for transportation in a dry state and fit for use in the arts of dyeing," &c. "Tannic acid may be extracted from oak, hemlock, and other kinds of bark, nut galls, and other substances by subjecting them to the action" of a caustic alkali "until the alkali becomes neutral." To this solution chloride of calcium is added, and the tannate of lime precipitated is collected, washed, and dried. To use this precipitate it is added to water acidulated with sulphuric, oxalic, or other suitable acid the lime precipitates, and the tannin in solution is "ready for the use of tanners or dyers."

[Printed, 4d. No Drawings.]

A.D. 1854, December 29.—No. 2749.

WIDNELL, HENRY.—“Improvements in the manufacture of carpets and other textile fabrics.”

The first part of this invention consists “in printing threads or yarns in such a manner as to omit the ground colours of the pattern, which may be separately filled in as required.”

The second part of the invention relates to the formation of a shed for the weft to pass through, and does not require further notice here.

“In printing the threads or yarns, the process is the same as that known as Whytock’s plan for printing warps, except that instead of including on the printing paper the ground colours in the places in which they occur in the pattern, the colouring on the printing paper is arranged so as to take only the several rows in succession of the device or pattern on the ground, as such device or pattern is marked on the said printing paper. By this means, the pattern as transferred stands on a few lines, as compared with the original, because the whole of the ground is left out. The threads are then printed from this paper in the ordinary manner. The ground colour may be inserted after the completion of each row, or it may be done before the coloured worsted or other material is put in.”

[Printed, 6d. Drawing.]

A.D. 1855, September 21.—No. 2122.

DALE, JOHN.—“Improvements in appropriating waste products arising in the manufacture of certain chemical compounds.”

These improvements are, in reference to this subject, as follows :—making “picric acid by the action of nitric acid on organic products,” and conducting “the evolved gases into protosalts of tin to peroxidize the same.” “The use of the evolved compounds of nitrogen with oxygen arising in the manufacture” of picric acid “for the oxidization of protosalts of tin or iron, or for the production of the class of salts known as nitrites, such evolved gas or gases having heretofore been a waste product,” is claimed.

[Printed, 4d. No Drawings.]

A.D. 1856, March 29.—No. 765.

GUIDO, ADOLPHE.—“Improvements in cleansing, washing, “ scouring wool and wollen fabrics and yarns.”

This invention relates to a mechanical compound called Panama powder which is used for the above-mentioned purposes. This powder contains stated proportions of caustic lye, soft soap, Marseilles soap, Panama, soap wort, and carbonate of soda. This compound is reduced for two hours in a boiler, and is then laid on a suitable plate, there to remain till it is completely dried.

[Printed, 4d. No Drawings.]

A.D. 1856, April 3.—No. 803.

JENKINS, WILLIAM.—(*Provisional protection only.*)—A method of manufacturing copper rollers for calico printing.

“A sheet or cake of copper of suitable dimensions is to be “ ‘rolled’ or hammered, in either a heated or cold state, until “ the metal is rendered sufficiently dense or solid for the “ surface required to be afterwards produced upon it, and is “ then to be bent, by means of ‘rollers’ or other suitable “ machinery, into a cylindrical shape or form, the edges being “ unjoined. The edges are to be joined together and the “ cylinder made complete by the action of melted metal “ poured upon and between them until they are fused, so that “ the metal so poured and the edges of the cylindrical form “ become incorporated, or welded, or joined together, producing a cylinder or roller.”

[Printed, 4d. No Drawings.]

A.D. 1856, May 19.—No. 1179.

WILKES, JOHN, WILKES, THOMAS, and WILKES, GILBERT.—“A new or improved manufacture of rollers or cylinders for “ printing fabrics.”

This invention consists in manufacturing the said rollers from old rollers.

First, the pattern is removed from the old roller by turning or otherwise; then the hollow copper cylinder produced from the old roller is expanded by passing a burr through its interior. Afterwards the hollow copper cylinder is elongated and its

diameter reduced by drawing as in the manufacture of tubes; the thickness of metal is also reduced by this method. The hollow copper cylinder is then placed upon a hollow cylinder of wrought iron or malleable iron, and the compound hollow cylinder is subjected to a drawing process; thus the copper cylinder becomes firmly fixed on the iron cylinder. The said hollow cylinder of iron is grooved longitudinally on its surface, or it may have a number of projections raised thereon, similar to those on a rasp and raised by the same means.

[Printed, &c. Drawing.]

A.D. 1856, May 19.—No. 1185.

WILKES, JOHN, WILKES, THOMAS, and WILKES, GILBERT. —“A new or improved manufacture of rollers or cylinders for “printing fabrics.”

This invention consists in manufacturing the said rollers by drawing a hollow cylinder of copper upon a hollow cylinder of wrought iron, malleable iron, or steel.

The copper cylinder is placed upon the iron cylinder and the compound cylinder thus produced is subjected to a drawing process as in the manufacture of metallic tubes. The drawing process elongates the said cylinders and reduces their diameter; also the copper cylinder is thus made to fit firmly upon the iron cylinder.

A series of longitudinal grooves is made on the iron cylinder, or indentations or projections are made on the same, so as to ensure the firmness of attachment between the copper and iron cylinders.

A rib runs the whole length of the interior of the iron cylinder.

[Printed, &c. Drawing.]

A.D. 1856, June 3.—No. 1314.

MACKELCAN, GEORGE JOSIAH.—“Improvements in the “manufacture of rollers adapted to calico and other printing.”

According to this invention a shell of copper is fixed on a cast iron cylinder by the intervention of a uniting medium, as tin or solder, which together with the contraction of the shell produces “adhesion and cohesion of the surfaces.”

First method.—The shell has its interior surface made chemically clean and is heated in an oven so as to dilate it sufficiently to admit the tinned cast-iron cylinder.

Second method.—The shell is internally coated with the uniting medium, and the cylinder externally. The shell is heated to about the melting point of the coating, and is dilated thereby. The cylinder is inserted in the shell, and they are allowed to remain in the oven until the whole is raised to the said melting point. When cool the shell and cylinder will be united by the cohesion of the surfaces and by the grip of the shell.

Third method.—The cylinder is inserted in the shell, they are placed with their common axis vertical, the lower end is stopped, they are heated to the said melting point, and the tin is poured in between the shell and the cylinder. The diameter of the shell may be greater than or equal to or smaller than that of the cylinder, in this case.

Fourth method.—The shell and cylinder are prepared as in the first case but without either being coated. The heated shell is allowed to contract upon the cold cylinder.

[Printed, 6d. Drawing.]

A.D. 1856, June 26.—No. 1505.

MACDONALD, DAVID.—“Improvements in printing textile fabrics and other surfaces.”

The invention relates to machinery more particularly suitable for printing from zinc patterns on muslins, to be afterwards embroidered, but is also applicable to printing “according to either the zincographic or lithographic systems.” It consists in giving an impression during the backward as well as the forward motion of the table carrying the plate or stone upon one of two rolls of fabric alternately. For this purpose two pressure rollers and two counter pressure rollers are arranged near the centre of the framing, the former being alternately depressed, so that the plate passes in contact with each of them, and imparts an impression to the fabric passing round it. “Self-acting,” damping, and inking apparatus, “supplied in any convenient way,” may be employed in combination with the above, either between the pressure rollers or outside them.

[Printed, 1s. Drawing.]

A.D. 1856, August 8.—No. 1867.

LEESE, JOSEPH, junior.—“Improvements in machinery used
“ for printing calico and other fabrics.”

This invention “consists of the application of scrapers, or
“ what are technically called doctors, for removing the
“ extraneous color deposited by the printing cylinders upon
“ the bowl itself, or upon the blanket or net of any kind used
“ for covering the bowl of the printing machine,” by which
arrangement the inventor saves colour and simplifies the
printing machine in many of its parts, as only a very short
blanket or none at all is required. Thus a part of the frame-
work is done away with, also many of the rollers required to
carry the blanket are rendered unnecessary.

Instead of applying the scraper directly to the blanket, a
roller is substituted therefor by the inventor; the roller
revolves against the face of the blanket or cylinder in a
reverse direction to that in which the blanket or cylinder
moves. The doctor or scraper is placed upon the roller, and
the colour is recovered from the roller instead of from the
blanket.

When required, the inventor uses “a small stream of liquid
“ color, or liquid of any kind;” this is caused “to flow in
“ front of the roller or scraper, so that it may act as a
“ lubricator, and so prevent injury to the bowl or blanket
“ covering it.”

[Printed, 4d. No Drawings.]

A.D. 1856, August 18.—No. 1924.

TYTHERLEIGH, WILLIAM.—A new “manufacture of rollers
“ or cylinders for printing fabrics.”

A hollow iron cylinder, of somewhat less diameter than the
roller to be manufactured, is perforated with holes, cleaned by
acids, covered with borax, and heated sufficiently to fuse the
flux. Copper or brass is fused in a vessel placed in another
furnace; the iron cylinder is put therein and turned so as to
coat it with the metal. Then the cylinder is placed vertically
in a hollow mould whilst hot, the mould being closed at the
bottom. An axis in the iron cylinder is adjusted, by screws,
in the axis of the mould. The whole is placed in a furnace,
and, when the coating on the iron cylinder begins to melt,

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fused copper is poured into the mould and the heat is maintained until the copper is thoroughly incorporated with the coating. The fire is then slackened, and the whole allowed to cool. The roller is afterwards turned.

In a modification of this process, the metal is first put into the mould and the iron cylinder is then placed in the fused metal.

Several modes of forming the longitudinal nib on the iron cylinder are set forth.

Another modification of the invention consists in dropping a slightly taper copper tube upon a coated iron cylinder, also slightly taper, and exposing the whole to heat. The heat is only sufficient to melt the solder, the solder being more fusible than the copper.

[Printed, *4d.* No Drawings.]

A.D. 1856, August 21.—No. 1952.

CROSSLEY, JOSEPH, and BOLTON, JAMES.—“Improvements in apparatus or means employed in the printing of yarns for carpets and other fabrics.”

Substituting for the oiled cloth, that is placed on the cylinder to receive the yarns to be printed a painted cloth. Lead paint is preferred. The improvements under this part of the invention “also apply to the use for the purpose stated of cloth prepared by a coating of india-rubber or gutta percha.” By the use of this invention the colouring matter is prevented from penetrating into the cloth during printing, and, when soiled, the cloths may be repainted.

Usually, when dyed yarns are subjected to the steaming process, they are placed upon the shellings of oats or chopped straw. This part of the present invention consists “in almost, if not entirely, superseding the use of the shellings or chopped straw” by supporting the yarns upon a cradle of metallic or fibrous cords. According to another plan, a sufficient quantity of shellings to prevent the colours from staining the wood, are placed upon a creel having wooden bars or perforated trays. Cloths catch the droppings of colour from the yarns; zinc trays answer well for these receivers, “as they not only serve to collect the colors which may drop from the yarns in the creel placed over them, but also to receive

“ the water of condensation from the steam employed in the steaming process.”

[Printed, 4d. No Drawings.]

A.D. 1856, September 8.—No. 2087.

ESTIVANT, FELIX. — “ Improvements in casting metal tubes.”

This invention is applicable to cylinders for printing fabrics.

The mould is composed of two parts, the separation being longitudinal; these parts may be opened or closed at will. A core of sheet iron, filled with sand, is employed. A “ reglet ” of thin iron, centres the core at its upper part. The mould is heated, and the metal is poured therein through sprays, so that the air bubbles carried into the mould by the fall of the metal remain in the said sprays.

The core used for casting calico printing cylinders has a groove in it, “ destined to make a projection inside the cylinder,” so as to fix the core on its shaft.

In the Provisional Specification the casting mould “ is of raw pig iron with an interior conical form, so as to allow the article to be easily removed after the casting operation is over.”

[Printed, 10d. Drawing.]

A.D. 1856, September 11.—No. 2123.

HUDSON, JAMES. — “ Improvements in whetting or setting “ ‘ printers’ doctors,’ and other straight-edged tools or instruments.”

“ My improvements consist in the employment of a rotating grindstone, instead of files, supported on suitable frame-work, and a carriage or apparatus for holding the blade or “ ‘ doctor,’ capable of sliding or travelling to and fro, or reciprocating upon a true rectilinear bed in connection herewith, and operated by suitable driving apparatus. The blade is caused to traverse in contact with the edge of the rotating grindstone from end to end of the said blade, whereby I obtain a true straight edge, and the apparatus being capable of adjustment, I can set the blades to any required angle or bevil of edge. I also mount a number of oilstones on the ends of spindles to which I give simultaneous rotary motion, and apply them in such a way as

"manner that the said blade or 'doctor' may reciprocate or traverse in contact therewith, same as on the grindstone. The apparatus may be driven by hand or power and applied to the grinding of any straight-edged tools or instruments."

[Printed, 1s. 2d. Drawings.]

A.D. 1856, October 16.—No. 2417.

STURGES, RICHARD FORD.—A new "manufacture of rollers or cylinders for printing fabrics."

A copper tube, somewhat greater in diameter than that which the finished roller is intended to have, is placed "in a vertical position with an iron axis or hollow mandril in its interior, the said tube and axis or mandril being held concentric by any convenient means. The space between the tube and axis or mandril is closed at bottom, so as to form an annular vessel." The space between the tube and axis is filled with melted zinc. "When the zinc has cooled, the whole may be placed in a lathe, and the roller or cylinder turned and finished in the usual manner. The inner surface of the copper or other tube may be coated with zinc, and the outer surface of the hollow mandril or cylindrical surface of the axis may be coated with zinc prior to the casting of zinc between them. Instead of zinc any other easily fusible and sufficiently hard metal or alloy may be employed."

The drawings show a copper ring placed in the bottom of the upright tube; this centralizes the mandril. When the annular space between the tube and the mandril has been filled with fused metal, a similar ring is dropped over the top of the mandril, thus closing up the said annular space. In each ring the surface of the ring in contact with the zinc is previously tinned. The mandril may be tapered so as to be withdrawn when the metal has cooled; when the mandril is a tube it is not withdrawn.

[Printed, 6d. Drawing.]

A.D. 1856, November 11.—No. 2649.

JONES, JOHN FELL.—"Improvements in the manufacture of rollers or cylinders for printing fabrics, and in machinery to be used in manufacturing the said rollers or cylinders."

1st. Constructing the liners or hollow cylinders that are placed between the mandril and the shell, firstly, by casting them in metal moulds in which mandrils of a suitable size and form are inserted, so that the interior is taper and has a longitudinal nib, secondly, by shaping the interior of the liner by machinery.

The machinery consists of a cutter bar provided with a cutting tool which is moved longitudinally in the interior of the liner, a small rotary motion being given to the liner. The projection forming the nib is left uncut. The longitudinal motion may be given by screw and screw-wheel gear. A taper is obtained in the inside of the liner by raising or depressing it at one of its bearings.

2nd. Securing the copper shells to the liners by soldering, tinning, zincing, or by depositing zinc or any other suitable metal; also by screwing the one upon the other.

3rd. "Embossing a pattern or design upon copper or other metal shells or tubes by pressure in dies or moulds."

[Printed, 10d. Drawing.]

A.D. 1856, December 4.—No. 2884.

CRAWFORD, DAVID.—"Improvements in washing, cleansing, and preparing textile fabrics and materials."

This invention relates to an arrangement of machinery for the above purpose and especially adapted to goods passing through the hands of the bleacher, dyer, and calico printer.

"Under one modification, this machinery consists of a rectangular frame, fitted up with rollers, dashboards, a dashing frame, and driving gearing." The frame is divided into a series of flats, one above another, each flat having a dashboard floor. The goods, in a continuous rope-like form, are passed through a bottom pair of taking-in rollers, and round horizontal rollers placed so that the fabric passes upwards (across each flat and through a vertically traversing frame which works centrally to all the flats) and finally emerges from the top flat of the series. Whilst jets of water fall upon the fabric at each flat, the reciprocating vertical frame dashes the stretched lengths of rope severely upon the dashboards. In its course the fabric receives a loose washing in side chambers. One peculiarity of this mode of mechanical wash-

ing is that the goods as they pass upwards are subjected at every stage to the action of water of increasing purity.

[Printed, *8d.* Drawing.]

A.D. 1857, January 1.—No. 3.

RIGBY, WILLIAM.—“Improvements in machinery or apparatus for engraving metallic cylinders or rollers employed for printing calico and other substances.”

This invention is an improvement upon that set forth in No. 819, A.D. 1854. In the earlier Specification one line of tools only is shown; the present invention relates to an improved construction of the tool carriage, so that more than one line of tools may be used on the same machine; it also relates to the use of more tool bars than one.

The cylinder rests on “dies,” the axis of which is connected by means of arms to the tracer carriage; thus, when the traverse of the tracer is in the direction of the arc of the bed on which is the enlarged pattern, the cylinder is rotated to a certain degree. When the tracer is moved in a lateral direction, it imparts lateral motion to the sliding frames to which the bars carrying the etching tools are fixed.

An arrangement of links or rods enables an alternate reverse action to be given to the tools and bars.

In another plan, the tool holders are adapted for employing two or more rows of tools, the members of the two rows being placed in alternate holders, or otherwise. In one modification the tools are lifted off their work by a cam and advanced to their work by adjustable weights. Another arrangement of tools has swivel bars, and the tool is returned to its work by means of a spring or india-rubber band.

[Printed, *10d.* Drawing.]

A.D. 1857, February 17.—No. 462.

WITHNALL, THOMAS.—(*Provisional protection only.*)—“Improvements in the manufacture of copper, brass, or other metallic rollers or cylinders.”

1st Modification.—Round the mandril is fitted a sheet of tin, the edges of which are joined in the usual manner; the tin is pressed into the slot of the mandril. The whole is inserted into a copper roller which is prepared to receive a

coating of solder. Molten metal is run into the space between the two tubes; the metal contains tin and the solder melts so as to form one compact body. The mandril is taken out when the metal is cool.

2nd Modification.—Instead of a sheet of tin a sheet of copper or brass is fitted round the mandril; the sheet is coated outside with tin solder. If the mandril is to be fixed in the roller it is coated with solder, and the intermediate sheet is dispensed with.

3rd Modification.—The shell is coated internally with solder and is inserted into a smaller cylinder of copper or brass coated externally with solder. Molten metal is run between the two, which on cooling combines the whole into one compact roller.

4th Modification.—The smaller cylinder in the third modification may be only of just sufficient diameter to insert in the larger cylinder. They are heated to fuse the coating, and when one is inserted into the other and the whole is cool, a compact roller is the result.

[Printed, 4d. No Drawings.]

A.D. 1857, April 22.—No. 1128.

BURTON, THOMAS, and LORD, SIMEON.—A “self-acting steam pipe regulator, which is also applicable to drying cylinders and other similar purposes.”

This steam-pipe regulator “can be applied with facility and advantage to drying cylinders, steam chests, printing machines, drying stoves, tape legs or dressing frames, finishing machines, steam pipes for mills, print works, dye works, bleach works, or other similar purposes.”

To carry off the air and condensed steam or water from steam pipes or vessels, a chest is connected to the pipe or vessel. At the upper part of the chest is placed a small ball valve which opens inwards, so that when the apparatus is in operation the air may be forced out of the chest. At the lower part of the chest is a delivery pipe, which communicates with the interior of a barrel valve; the passage is open at both ends, and has an aperture which can open to or be closed from the outlet pipe by turning on its seat. A float and lever within the chest is connected to the barrel valve, so that, as the float rises or falls, motion is given to the valve. “When

" the air is expelled and the float rises, the tap gradually
 " opens; and when the float is raised to its full height by the
 " accumulation of condensed steam or water, the aperture in
 " the barrel is full open to the outlet pipe."

[Printed, 8d. Drawings.]

A.D. 1857, July 17.—No. 1982.

BARWELL, WILLIAM.—(*Provisional protection only.*)—"Im-
 " provements in casting metals."

One of the methods of working this invention appears to
 apply to the manufacture of calico printing rolls.

The method of casting which forms the subject of this in-
 vention "is especially applicable to the casting of hollow
 " cylinders of copper." The following description relates to
 the manufacture of "printing rollers." The inventor states:
 —"I make a mould of a suitable form for casting a cylinder,
 " and I support in the axis of the mould a core or cylinder,
 " and between the interior of the said mould and the said core
 " the molten metal is poured in the usual way. I make the
 " said mould of coarse sand mixed with horse dung, or chopped
 " straw or hay, or other suitable matter, and I make the core
 " of a cylinder of the same materials, in the interior of which
 " I prefer inserting a metallic rod or cylinder for the purpose
 " of strengthening the same. In order to make the mould
 " and core more porous, I pick small holes therein. When
 " the molten metal is poured in a mould prepared as described,
 " the air escapes freely through the pores and perforations in
 " the mould and core, and the casting produced is sounder
 " than castings obtained by the ordinary method of casting.
 " The casting is not removed from the mould until it has
 " perfectly cooled."

[Printed, 4d. No Drawings.]

A.D. 1857, July 28.—No. 2060.

BOBCEUF, PIERRE ALEXIS FRANCISSE.—"Improvements in
 " preserving and otherwise treating animal and vegetable
 " substances, and in the purification of oils employed therein,
 " and which may be used for other purposes."

One of the objects of this invention is "the coloring of silk,
 " wool, leather, bone, ivory, feathers, &c."

Tri-nitro-phenic acid derived from the saponifiable acid oils is used for the above purposes; also a combination of tri-nitro-phenic acid and alum is employed, as "the alum combines with nearly all tissues, and its combination produces purer and more lasting colors."

Tri-nitro-phenic acid is obtained from the said oils in the following manner:—Commercial phenic acid obtained from the phenate of soda is treated with nitric acid in definite proportions and with precautions in the mixing; at one part of the process heat is used and the remainder of the nitric acid is then added. The heating is continued and evaporation goes on until the reaction is complete. The mixture is then filtered to disengage the nitric acid from it.

To render the acid derived by substitution soluble in water, caustic alkali may be used. The substances coloured with solution should be rinsed with slightly acidulated water to fix the yellowish-brown colour.

"Tri-nitro-phenic acid may be used cold as a coloring agent. With carmine and indigo it produces good greens."

[Printed, 6d. No Drawings.]

A.D. 1857, August 7.—No. 2129.

BRADLEY, JOHN.—(*Provisional protection only*).—"Improvements in machinery or apparatus for engraving metallic cylinders or rollers employed for printing calico and other surfaces."

1st. Transferring and reducing designs to the surface of the said rollers. A horizontal bar is guided by gradients, and moves laterally upon its centre, one end of the bar being further from or nearer to the centre, according to the degree of diminution required. This pentagraph moves the cylinder on its axis by means of a stud, sliding bar, rack, and pinion. By means of another stud, working in a sliding frame, the pentagraph carriage is moved laterally. Two pulley bands attached to this carriage are secured to a second traversing carriage, which also traverses laterally but in a reverse direction to the first-mentioned carriage. Or a screw and eccentric may be worked from the division wheel. Mills are placed upon the upper traversing bed, or upon both upper and lower. Diamonds may be similarly employed upon either or both beds.

2nd. "Producing or transferring the pattern to be engraved
 " from the enlarged diagram to the table of the machine."
 Placing the diagram in strong light, so as to cast a shadow
 therefrom, " which is cast or reflected upon the table by means
 " of a mirror or other polished surface, when, if the room be
 " darkened, the pattern may be traced, and thus the use of
 " plates, cards, or templates is dispensed with."

[Printed, 4d. No Drawings.]

A.D. 1857, August 26.—No. 2263.

GOODWIN, JAMES, and BOYD, ANDREW.—"Improvements in
 " cleansing printed cotton and silk fabrics from colouring
 " matters."

The object of this invention is " the cleansing of printed
 " fabrics from the colouring matters diffused over the surface
 " of the fabrics during the process of printing."

The Provisional Specification sets forth that after the fa-
 brics are washed in cold water, they are placed in a boiler that
 contains water in which sifted cinders are diffused; the boiling
 is continued for some time and the fabrics are taken out and
 washed in cold water.

The Final Specification sets forth the method of preparing a
 cleansing fluid from the cinders in a separate vessel. One
 gallon of water is added to every five pounds weight of cinders
 in the boiler. When the boiling has continued five hours, a
 quantity of chalk is added to the liquor in the boiler and the
 boiling continued one hour longer; the fire is then withdrawn
 and the liquid allowed to clear by settlement. The supernatant
 liquor is drawn off and put up in casks ready for use. In
 general, one gallon of cleansing fluid to forty gallons of water
 is suitable for cleansing printed cotton and silk fabrics. A
 small proportion of alkali may be added to this fluid. The
 fluid is also useful as a substitute for the "dunging liquor"
 used by calico printers.

[Printed, 4d. No Drawings.]

A.D. 1857, September 18.—No. 2414.

SMITH, WILLIAM.—(*A communication from Pierre Elie Gaiiffe.*)
 —An "apparatus for engraving the metallic surfaces of print-
 " ing rollers or cylinders."

A pattern "mullar" or cylinder rotates under a tracing point with a velocity proportionate to that of the cylinder to be engraved, which rotates in front of an engraving tool. The tracing point and engraving tool have also proportional longitudinal motions from the same wheelwork that rotates the cylinders. The pattern is drawn upon the pattern cylinder in non-conducting varnish, and the tool-holder is furnished with an electro-magnet. On the passage of the tracing point over the conducting portions of the pattern cylinder the electro-magnet holds back the engraving tool, but when the varnished pattern breaks the circuit, a spring forces the tool to engrave the cylinder. Thus, on the machine being put into action, figures are cut by the engraving tool proportionate to those passed over by the tracing point; the relative size of the figures depends upon the wheel-work and screw gear concerned in transmitting and giving the requisite motions.

"If the pattern is composed of several shades, the darkest ones are first painted and engraved, and afterwards the lighter ones."

A to-and-fro motion is given to the tool-holder by an eccentric "working at high speed." The undulatory lines thus produced "retain the colour used for printing," and give "to the print quite a different and better appearance."

This invention "can be applied to any engraving machine constructed upon the pantographic principle."

[Printed, 1s. 6d. Drawings.]

A.D. 1857, October 28.—No. 2736.

CLARK, WILLIAM.—(*A communication.*)—"Improvements in the manufacture of murexide."

This invention consists in "the treatment of a solution of uric acid in nitric acid diluted with water, and saturated sufficiently to form a mixture of alloxan and alloxantine, by a neutralizing substance, under the following conditions, in order to produce, in its crystallized state, the colouring matter called murexide."

"First, treating cold a solution of alloxan and alloxantine with a neutralizing substance, principally with ammonia or carbonate of ammonia."

"Secondly, adding the neutralizing substance in portions, and at intervals."

"Thirdly, the subsequent heating of the mixture of alloxan and alloxantine, after it has been suitably saturated by the neutralizing substance, to from sixty to seventy-seven degrees centigrade."

After heating, the mixture is "allowed to cool, and subsequently the crystallized deposit on the filters is gathered. The mother waters are taken a second time, sometimes even a third time, or as long as they yield murexide, to undergo a similar treatment as regards temperature, but at each time with a weaker and weaker neutralizing agent, say for the second time, one-fourth of the strength of the first, and for the third, one-sixteenth of the first."

"For the purposes of dyeing and printing it is useless to wash and dry the product gathered from the filters; it may therefore be collected in a state of green paste."

[Printed, 4*l*. No Drawings.]

A.D. 1857, December 15.—No. 3085.

EVERITT, GEORGE ALLEN.—"Improvements in the manufacture of tubes or cylinders of copper or alloys of copper."

1st. The cores and the moulds employed have a larger sectional area "when ready to receive the molten metal than the sectional area of the tube or cylinder required to be produced." To obtain this, spaces or grooves are left between the edges of the several parts of the mould; these spaces are filled with sand which acts as a cushion to prevent immediate contact of the edges of the mould. Directly the tube or cylinder has been cast, hydraulic pressure is applied "to the outside of the mould, closing its parts together; the sand is thus forced out, and the sectional area of the mould being thereby reduced, great compression of the molten metal takes place, and a sound cylinder is produced."

2nd. Alloying copper for subsequent manufacture into cylinders for printing rollers. The alloy consists of eight parts of copper to one of yellow brass; the cylinder cast from it is free from air holes, it is afterwards drawn down as a solid tube.

3rd. Cleansing or pickling the said cylinders, "prior to the first operation of drawing, and also prior to every subsequent drawing operation (except the last);" the pickle

employed is a solution of soft soap and water. This portion of the invention is not mentioned in the Provisional Specification.

[Printed, 4d. No Drawings.]

A.D. 1863, December 5.—No. 3063.

WANKLYN, JAMES ALFRED.—(*A communication from Eugen Lucius.*)—(*Provisional protection only.*)—"Improvements in the "production and manufacture of certain yellow and orange "colors."

The said colours are obtained from the insoluble residue, and also from the mother liquors resulting from the manufacture of aniline red dyes.

The insoluble residue treated with caustic soda is dissolved in nitric acid. To this solution is added an alkali, say caustic soda, to precipitate the colour. The precipitate is washed with water, and may be employed, in conjunction with suitable solvents, for the purposes of dyeing.

The mother liquor is treated with caustic soda. The resulting precipitate, after having been collected and washed, is treated in the manner herein-before mentioned for the treatment of the insoluble residue. If very dilute nitric acid be used to dissolve the precipitate, a yellow colour will be obtained; a stronger acid gives an orange colour.

[Printed, 4d. No Drawings.]

A.D. 1865, July 4.—No. 1766.

DALE, JOHN, and DALE, RICHARD SAMUEL.—"Improvements "in the production of pigments suitable for printing upon "paper and woven fabrics."

This invention consists in "the use of precipitates obtained "from quercitron bark, fustic, catechu, and other analogous "substances, with metallic salts as mordants for the reception of coal tar colours for the production of pigments."

The said precipitate is obtained by adding to a solution of one of the above-mentioned substances, a solution of a metallic salt, in sufficient quantity to precipitate the whole of the colouring matter. A solution of tin or alumina is preferred as the precipitant. "In this way pigments are obtained varying "in colour according to the material employed."

The next operation is to "take any one of the precipitates above mentioned, and treat the same with a solution of the coal tar colour required, and continue the addition thereof so long as it is taken up by the precipitate." "A great variety of shades and colours may be obtained according to the nature of the precipitate used and the mixture of the coal tar colours employed."

In producing a maroon, to yield the precipitate, a solution of quercitron bark is treated with a solution of perchloride of tin. The resulting precipitate is washed, diffused through boiling water, and dyed with aniline red.

To produce a green, a solution of aniline blue is used; the addition thereof is continued until the shade of colour is obtained, adding no more than is taken up by the precipitate.

[Printed, 4d. No Drawings.]

A.D. 1865, December 29.—No. 3374.

HUGHES, EDWARD JOSEPH.—(*A communication from Charles Lauth.*)—"Improvements in the manufacture of aniline green."

The method which constitutes these improvements is based upon the action which sulphur in the nascent state exercises upon the blue of aldehyde.

Aldehyde blue is produced by mixing, in certain proportions, magenta dye or rosaniline, water, sulphuric acid, and aldehyde; this mixture is allowed to stand until a deep blue colour is produced. "The said blue is then poured in a solution of one part of polysulphide of soda or any other analogous sulphide or substance capable of developing sulphur in the nascent state, and five hundred parts of hot water. After this has been done the mixture is transformed into a deep green solution, which is ready for dyeing or for precipitating in the usual way for aniline colors."

A mixture of liver of sulphur and sulphite of soda may be used to act upon aldehyde blue.

To precipitate the green solution, tannin, either alone or with the addition of common salt, may be used.

[Printed, 4d. No Drawings.]

SUPPLEMENT B.

A.D. 1822, September 27.—No. 4704.

BOURDIEU, JOHN.—“A method or means of improving the preparation of colours for printing wove cloths.”

[No Specification enrolled.]

A.D. 1832, March 22.—No. 6247.

BROWN, WILLIAM ALEXANDER, and HENDRICKS, HERMAN.—*(A communication.)*—“An improved method or methods of manufacturing the prussiates of potash and soda and the prussiate of iron;” also “the construction of certain apparatus, vessels, or machinery, to be used in the said manufacture, and a new or improved method or methods of employing the said prussiate of iron or other prussiates of iron, as a substitute for indigo, in dyeing all sorts of wools, whether in the fleece, skin, spun, or woven into cloth, stuffs, or otherwise; also in dyeing silks, cottons, linens, and in fact all other sorts and descriptions of textile or other substances fit for the purpose of receiving colour of a blue blue black, black, greens, bronze, or any other colours for which indigo has hitherto been used, either as a ground work or auxiliary;” also “an improved arrangement of certain utensils and machinery to be used in the said dyeing process.”

[No Specification enrolled.]

A.D. 1841, January, 26.—No. 8812.

LLOYD, NATHANIEL, and ROWBOTHAM, HENRY.—“Improvements in thickening and preparing colours for printing calicoes and other substances.”

This invention consists in the substitution of the brown sago of commerce for the ordinary gums used for the above purposes; the sago is “calcined from the granulated or seed state in which it is usually imported.” This method is preferred although “sago reduced to flour and whitened by the

“ ordinary means may be also employed for the same purposes.”

The sago is calcined at once from the granulated state, which saves the expense and process of pulverizing and whitening; it will be found to be much more gelatinous than when in the flour state. “The calcined brown sago merely requires to be mixed with water and brought up to two hundred or two hundred and twelve Fahrenheit, when it is fit for use.”

[Printed, 4d. No Drawings.]

A.D. 1852, October 9.—No. 318.

MADDICK, WILLIAM. — (*Provisional protection only.*)—“An improved method of extracting and concentrating by evaporation the colouring and other principles from all substances in which they are contained, and of thoroughly exhausting the same.”

“Instead of extracting the coloring and other principles from woods, roots, or other substances by forcing steam into a closed metal vessel which contains the dye wood, &c., and passing the extracted coloring matter therefrom, with the condensed steam, into vessels in which it is concentrated by steam, either applied externally as a steam jacket, or internally by pipes passing through the evaporators, or by cylinders filled with steam and revolving in the evaporating liquor,” the inventor puts the dye wood or other matter from which particular principle is to be extracted in open vessels,” and he pours “water (not steam) upon it.” This process is continued until the whole of the colouring or other principle is extracted. “The liquor resulting is then subjected to evaporation at a low temperature in one vessel only, and brought into a marketable state.”

“By this improved method a liquor is produced which at half the strength, as shewn by the hydrometer, is of superior quality to that manufactured by the old process.”

[Printed, 4d. No Drawings.]

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